993

C. H. OSBORN.

INCUBATOR.

APPLICATION FILED JULY 15, 1914.

1,144,232.

Patented June 22, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

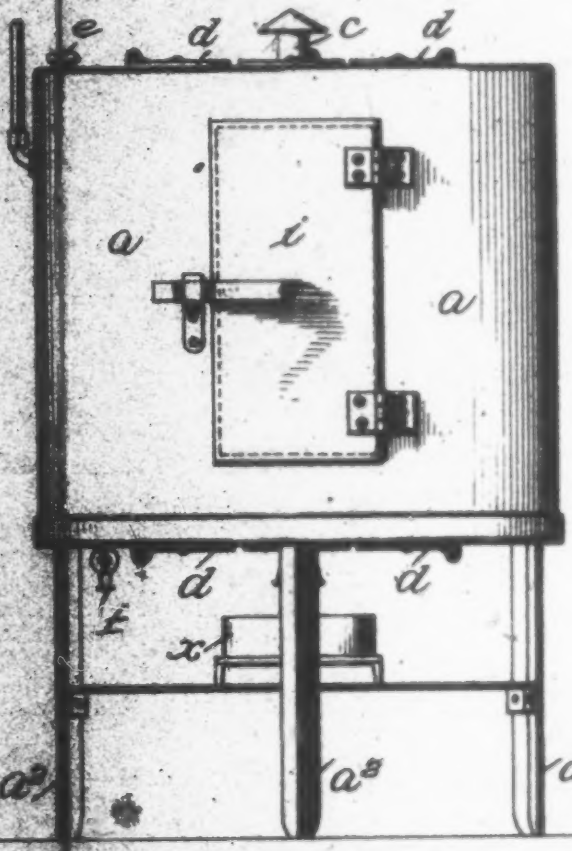
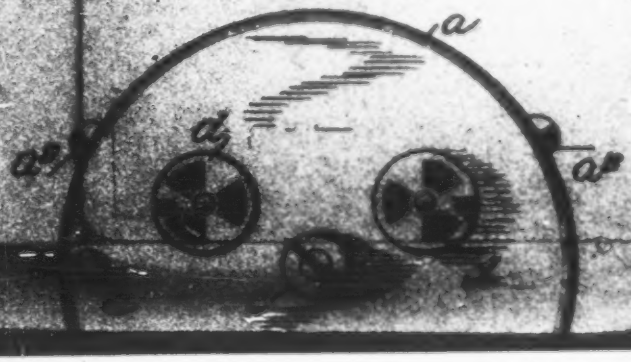


Fig. 2.



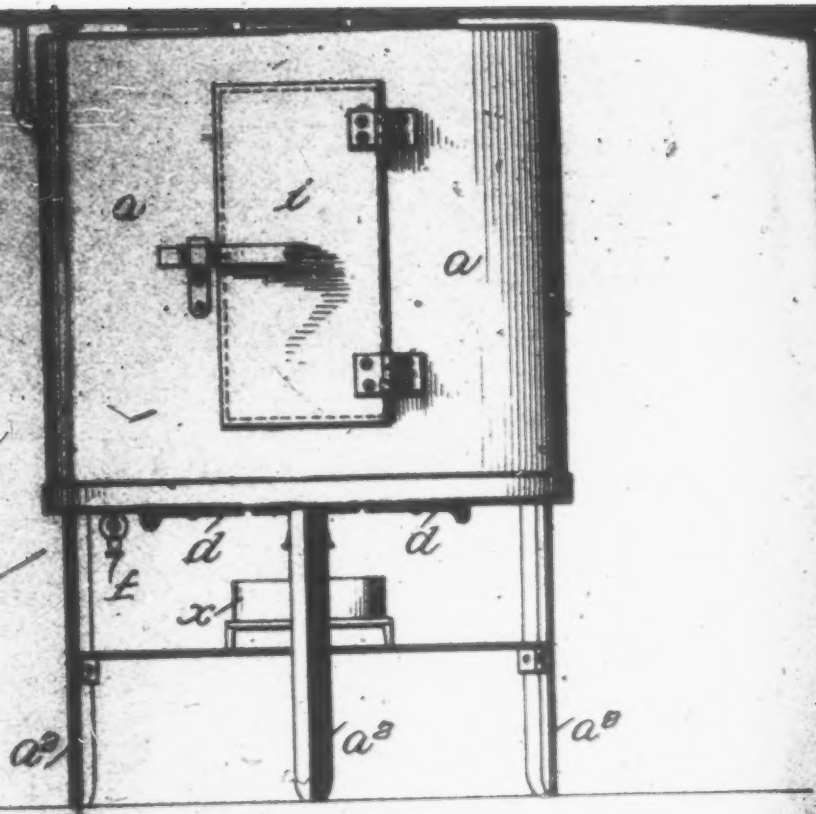
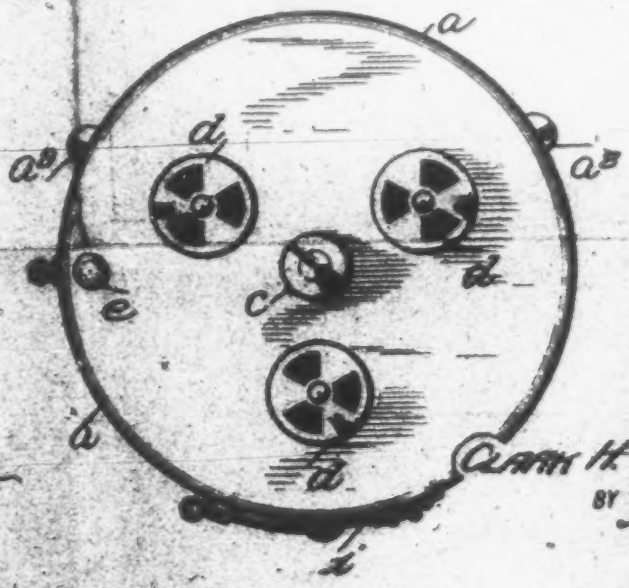


Fig. 2.



WITNESSES
C. W. Cunningham
A. E. Beck

INV
CLARK H. OSB
BY Munn
ATT

994

C. H. OSBORN.

INCUBATOR.

APPLICATION FILED JULY 15, 1914.

1,144,232.

Patented June 22, 1915.

2 SHEETS—SHEET 2.

Fig. 3.

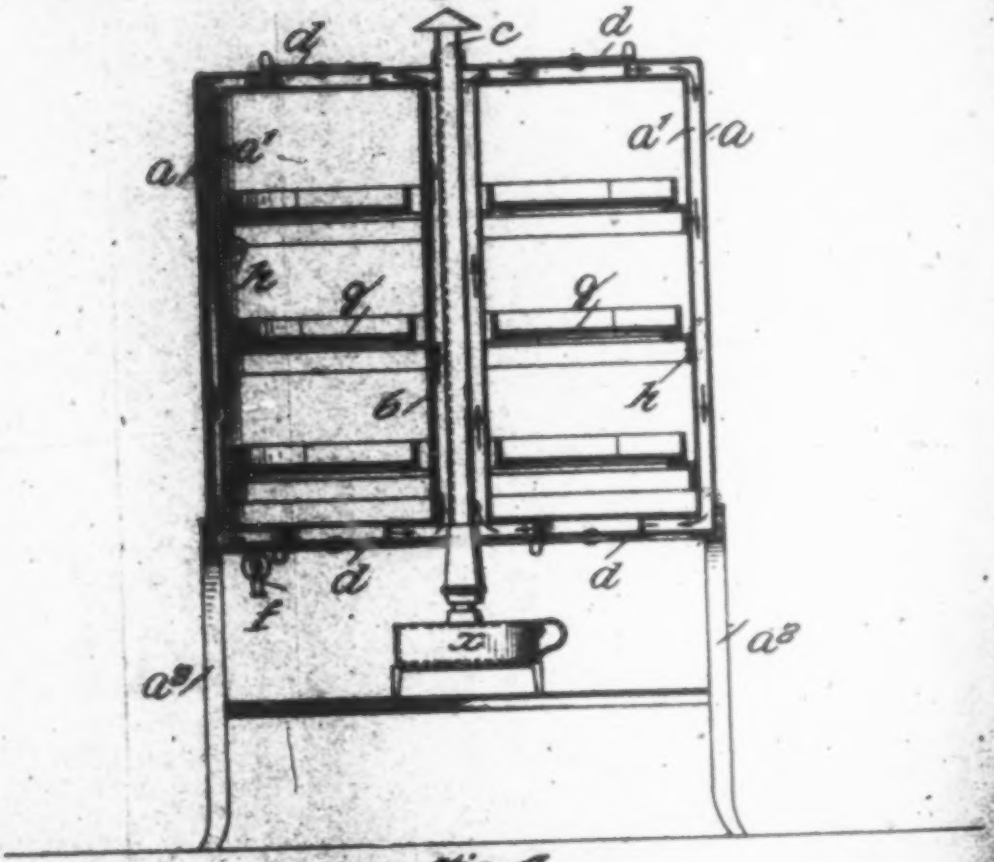
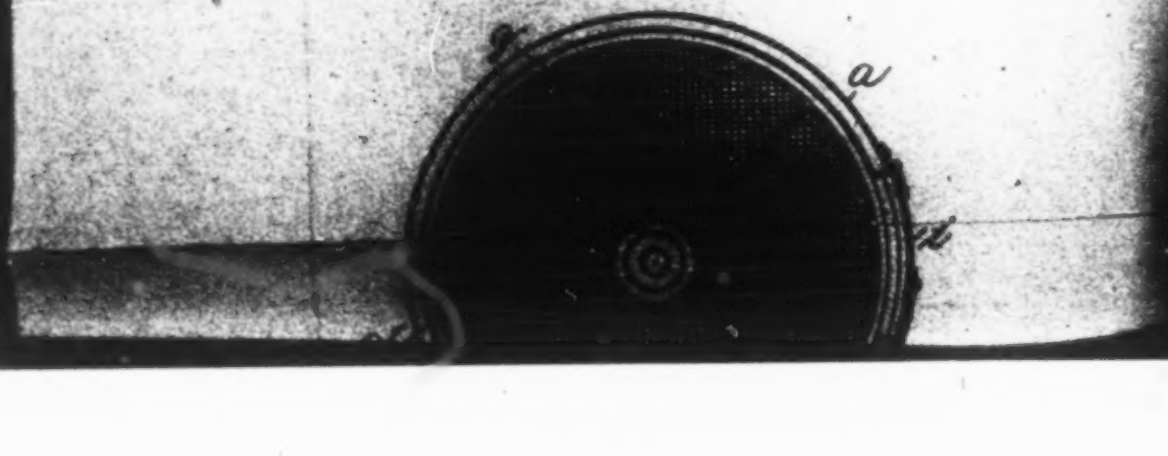


Fig. 4.



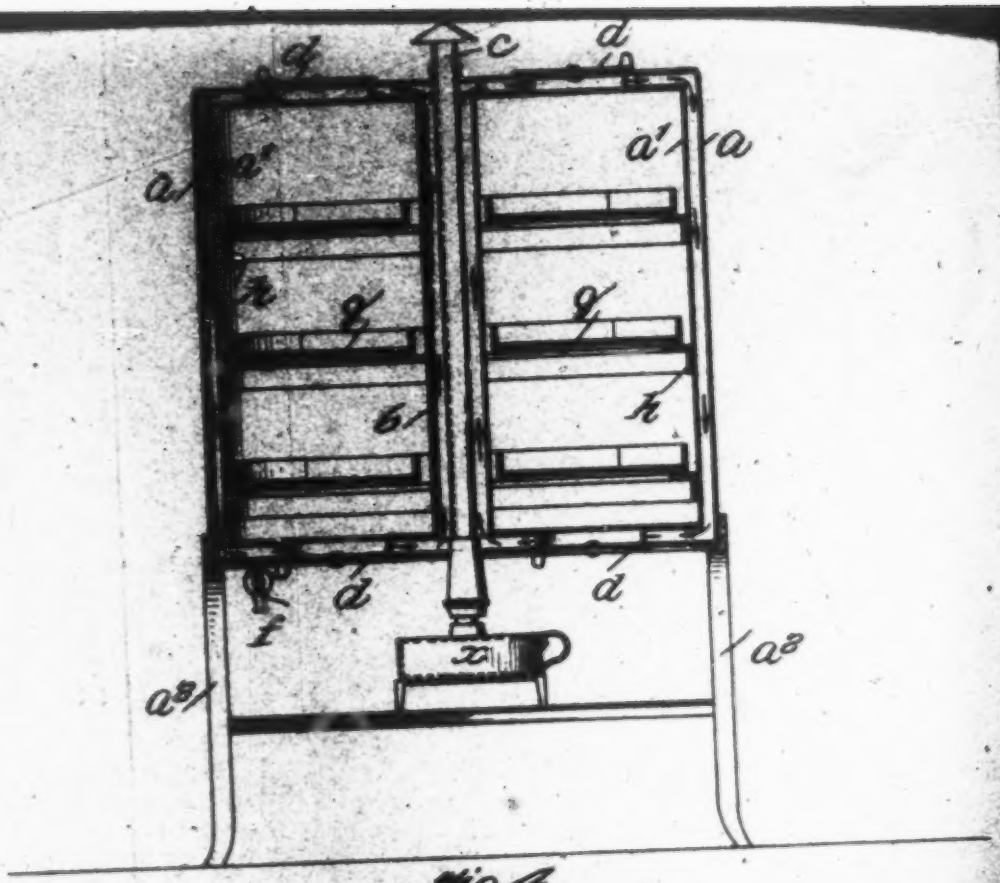
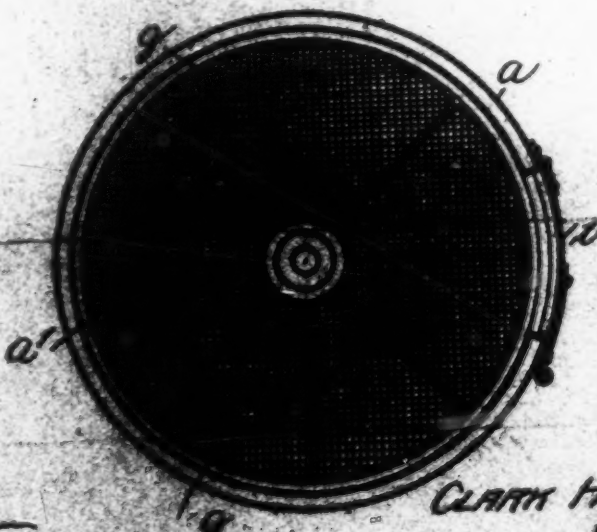


Fig. 4.



WITNESSES
H. C. Beck

INVENTOR
CLAUDE H. OSBORN
BY
ATTORNEY

UNITED STATES PATENT OFFICE.

CLARK H. OSBORN, OF ST. JOSEPH, MISSOURI.

INCUBATOR.

1,1[illegible],[illegible]. Specification of Letters Patent. Patented June 22, 1915.

Application filed July 18, 1914. Serial No. [illegible].

To all whom it may concern:

Be it known that I, CLARK H. OSBORN, a citizen of the United States, and a resident of St. Joseph, in the county of Buchanan and State of Missouri, have made an Improvement in Incubators, of which the following is a specification.

My invention pertains to that type of incubators in which the required temperature is maintained by heated water contained and circulating in the hollow walls surrounding the egg-holding pans or trays.

In carrying out my invention I support a series of pans or trays one over the other around a central vertical, metal tube which serves as an elongated chimney for a lamp employed as a heating medium. The egg trays are supported upon flanges secured to the inner wall of the body or casing of the incubator, and may be rotated thereon to facilitate the introduction of eggs through a door provided for this casing or body.

The details of construction, arrangement and operation of the incubator are as hereinafter described and shown in the accompanying drawings in which:

Figure 1 is a side elevation of the incubator; Fig. 2 is a plan view; Fig. 3 is a central vertical section of the same; Fig. 4 is a [illegible]

[illegible] incubator is cylindrical [illegible]

into the spaces in which it circulates as shown by arrows, Fig. 3. A drain-cock *f* is provided at the bottom of the body for drawing off water when required. Circular egg-holding pans *g* are provided, there being in this instance three arranged one above another, as shown in Fig. 3. The bottoms of these trays are formed of woven wire to permit free circulation of heated air. The pans are supported upon right-angular flanges *h* secured to the inner wall of cylinder *a'*. The central portions of the trays are provided with flanged openings which receive the tube *e*, and permit the circulation of air. The outer body of the incubator is provided with a door *i*, the same being hinged and provided with a pivoted latch as shown.

It will be understood that the annular trays *g* may be rotated around the central tube *b* for the purpose of bringing any portion of them adjacent to the door for receiving eggs or removing egg-shells and chickens. The trays are each divided by four radial partitions *g'*, as shown in Fig. 4. It will be understood that the water becoming heated from the lamp, will rise in the central space between the tubes *e*, *e*, and, by diverging at the top, they pass down around the sides and under the bottom of the [illegible] and thus back to the [illegible] the interior of the [illegible]

[illegible]

Application filed July 15, 1914. Serial No. 851,000.

To whom it may concern:

Be it known that I, CLARK H. OSBORN, a citizen of the United States, and a resident of St. Joseph, in the county of Buchanan and State of Missouri, have made an Improvement in Incubators, of which the following is a specification.

My invention pertains to that type of incubators in which the required temperature is maintained by heated water contained and circulating in the hollow walls surrounding the egg-holding pans or trays.

In carrying out my invention I support a series of pans or trays one over the other around a central vertical, metal tube which serves as an elongated chimney for a lamp employed as a heating medium. The egg trays are supported upon flanges secured to the inner wall of the body or casing of the incubator, and may be rotated thereon to facilitate the introduction of eggs through a door provided for this casing or body.

The details of construction, arrangement and operation of the incubator are as hereinafter described and shown in the accompanying drawing, in which,

Figure 1 is a side elevation of the incubator; Fig. 2 is a plan view: Fig. 3 is a central, vertical section of the same: Fig. 4 is a horizontal section.

The body of the incubator is cylindrical in form and constructed of sheet metal, there being two cylinders *a* and *a'*, the latter arranged within the former and spaced therefrom, top, bottom, and sides, to form a [illegible] which water circulates. The [illegible] two cylinders which thus form [illegible] supported by a tube *b* whose ends [illegible] with the top and bottom of [illegible] cylinder *a'*, as shown in Fig. 3. [illegible] is arranged within the tube [illegible] spaced therefrom by an annular [illegible] upper end of the inner tube *c* [illegible] the incubator body and is [illegible] with a cap. The lower end of the [illegible] tube *c* is [illegible] to adapt it to receive [illegible] a lamp, by which it is [illegible] The incubator [illegible] top and bottom with [illegible] layers of asbestos [illegible] heat. [illegible] [illegible] [illegible]

is apparent that the incubator may be continuously operated, fresh eggs being supplied as others are hatched.

I claim:—

1. The improved incubator comprising a body having hollow walls formed by inner and outer cylinders spaced apart, a central vertical tube connecting the upper and lower ends of the inner cylinder, a water-holding circulating space being thus formed at the top, bottom, sides, and middle of the incubator, and egg-holding trays arranged and supported within the inner cylinder, as described.

2. The improved incubator comprising a body former of inner and outer concentric cylinders spaced apart at top, bottom, and sides, a central tube connecting the top and bottom of the inner cylinder, and a smaller tube arranged within the former and spaced therefrom, the same being extended [illegible] the body and to the top of the outer [illegible] der and serving as a chimney and ha[illegible] tributer, as described.

3. The improved incubator comp[illegible] inner and outer concentric cylinders [illegible] apart at top, bottom and sides, a c[illegible] tube connecting the ends of the inner [illegible] der and providing a water circulating [illegible] in the center, and on the top, bottom, [illegible] sides of the body, a heating tube arra[illegible] within the first-named tube and sp[illegible] therefrom, and means attached to the [illegible] and bottom of the body for regulating [illegible] mission of air, as described.

CLARK H. OSBORN

Witnesses:
MOSES H. CRAIG,
ERNEST R. JAMES.

997

R. F. FULLINGTON.

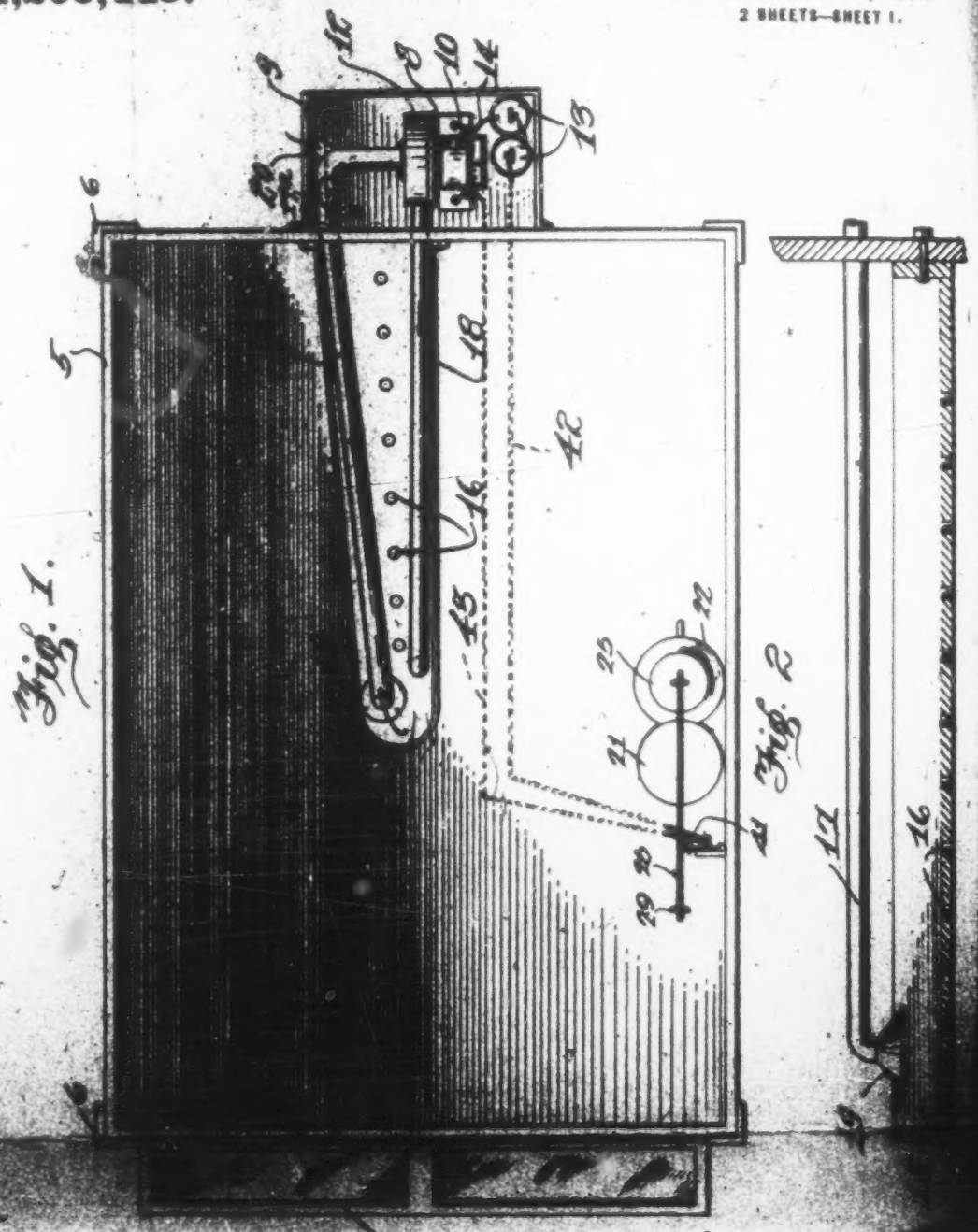
INCUBATOR ATTACHMENT.

APPLICATION FILED SEPT. 18, 1914.

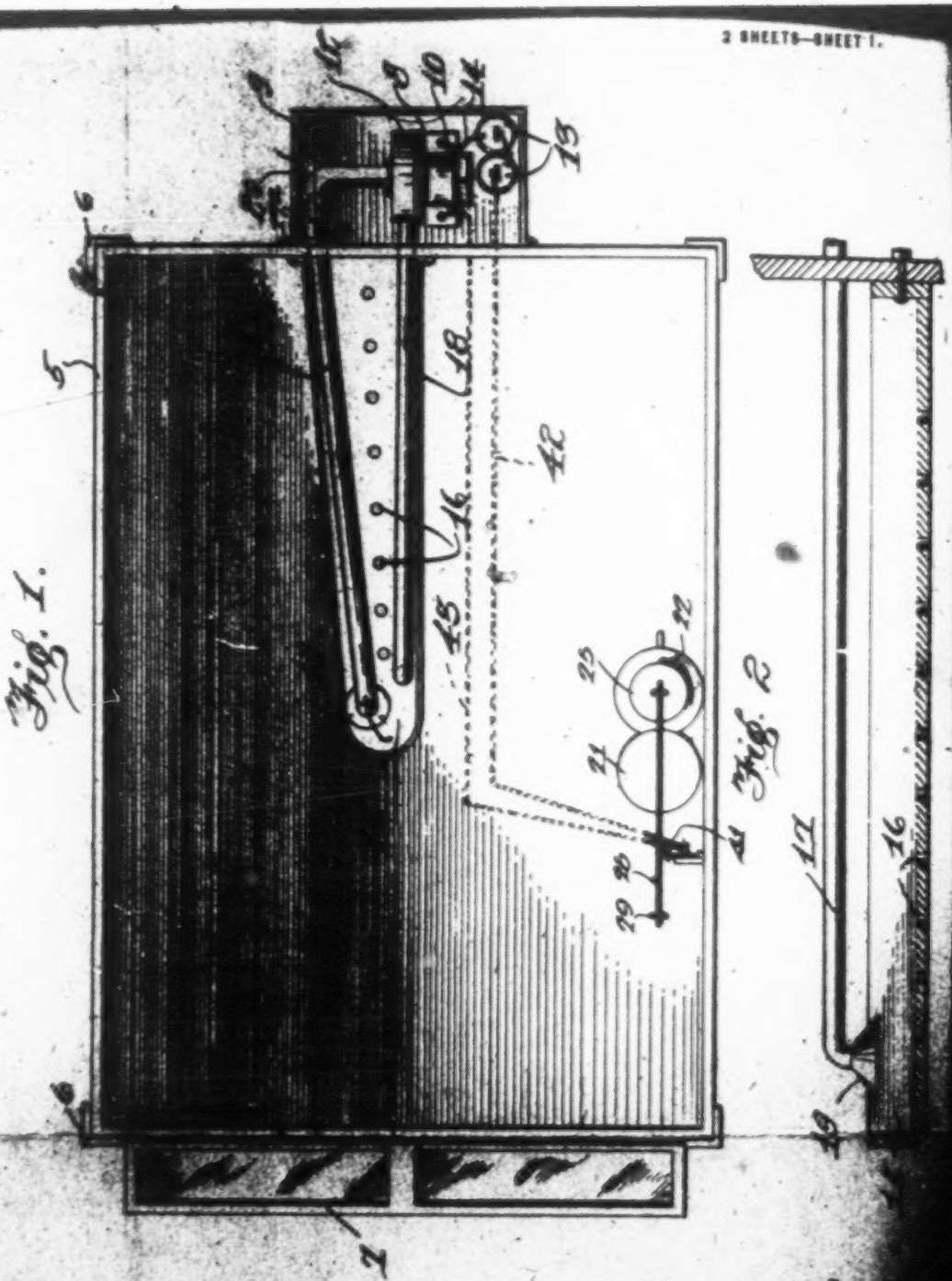
1,205,445.

Patented Nov. 21, 1916.

2 SHEETS—SHEET 1.



2 SHEETS—SHEET 1.



Witnesses
[illegible]
Ross J. Woodward

Roy F. Fulling[illegible]
By Richard [illegible]

998

R. F. FULLINGTON.
INCUBATOR ATTACHMENT.
APPLICATION FILED SEPT. 18, 1914.

1,205,445.

Patented Nov. 21, 191
2 SHEETS—SHEET 2.

Fig. 3.

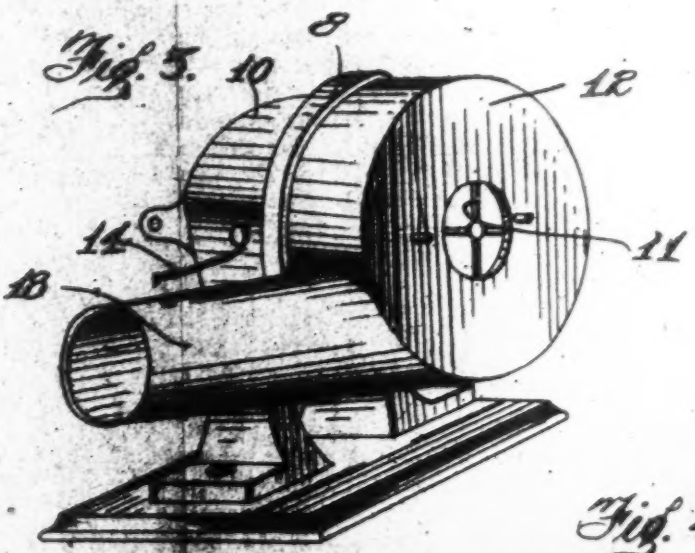


Fig. 4.

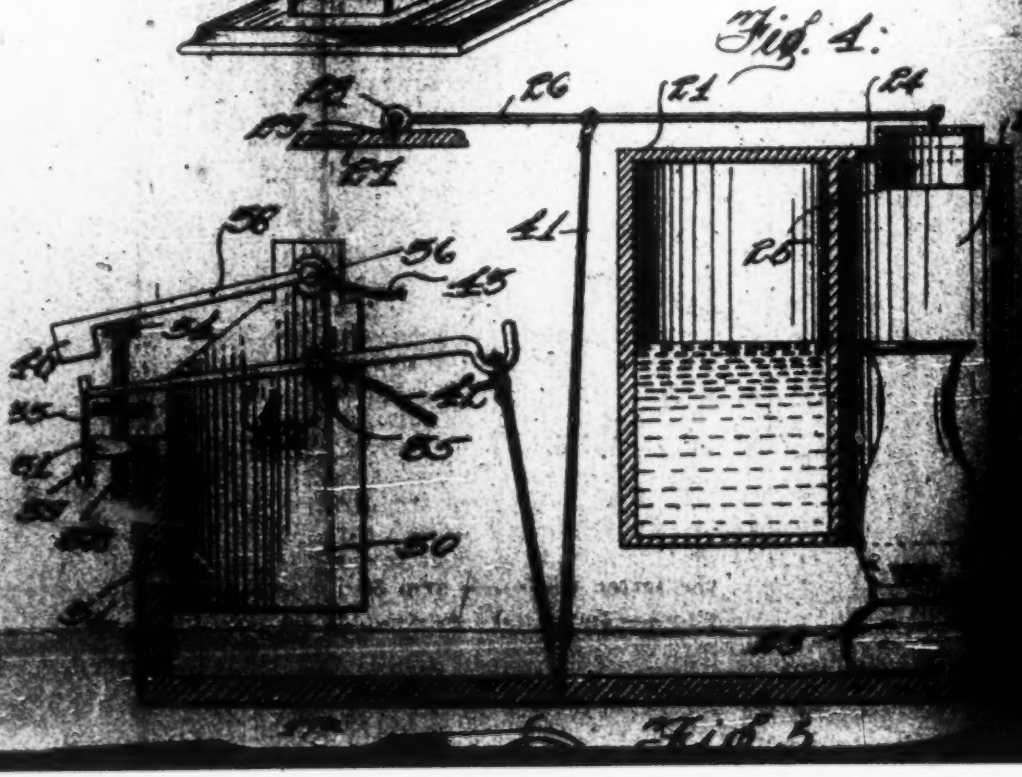


Fig. 3.

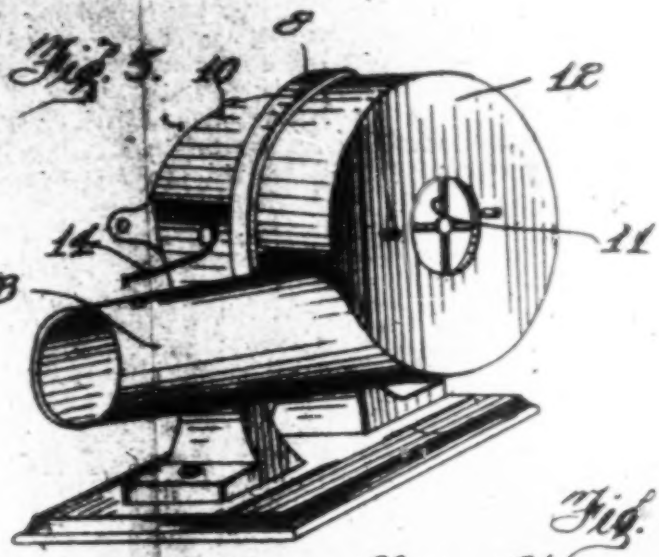


Fig. 4.

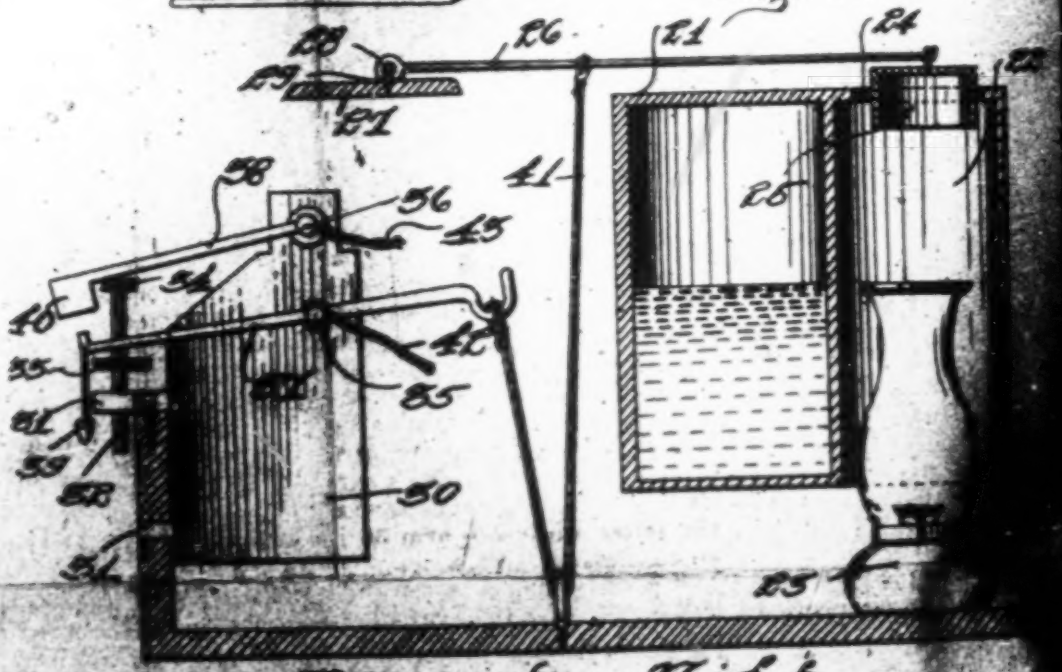
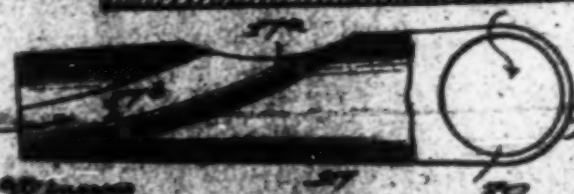


Fig. 5.



Roy F. Fullington

Witnesses

R. C. Kinnel

Thos. J. Woodward

By Richard Owen

Attorney

UNITED STATES PATENT OFFICE.

ROY F. FULLINGTON, OF CLIFTON HILL, MISSOURI.

INCUBATOR ATTACHMENT.

1,205,445. Specification of Letters Patent. Patented Nov. 21, 1916.

Application filed September 18, 1914. Serial No. 862,376.

To all whom it may concern:

Be it known that I, ROY F. FULLINGTON, citizen of the United States, residing at Clifton Hill, in the county of Randolph and State of Missouri, have invented certain new and useful Improvements in Incubator Attachments, of which the following is a specification.

This invention relates to incubators or brooders, and has particular reference to an attachment for that type of devices which may be depended upon to automatically regulate the temperature at which the brooder or incubator is to be kept.

More specifically, it is an object of this invention to provide means normally quiescent for removing heated air from the interior of the incubator when actuated automatically by means governed by the increase of heat, so that overheating of the incubator is prevented.

A further object is to adapt the means previously set forth to prevent the under cooling of the incubator and to further provide means so simple in their construction and so capable of being cheaply manufactured that costly thermometers or thermostats may be dispensed with and yet their necessary operations performed in an equally efficient manner.

The above and additional objects which will become apparent as this explanatory description proceeds, are accomplished by such means as are illustrated in the accompanying drawings, described in the following specification, and then more particularly pointed out in the claims which are appended hereto and form a part [illegible]

[illegible] there [illegible] means [illegible]

meral 5 denotes the inclosing body portion of an incubator or brooder which may be supported in any usual manner as indicated at 6 and which is provided with a hinged closure 7, here illustrated as in its outwardly swung position. The interior of the casing 5 is adapted to be filled with rows or tiers of egg trays, which may be of the usual construction positioned in the customary manner. It is purposed by this invention to provide an electric fan 8 which shall be intermittently actuated as the amount of heat entering into the incubator shall dictate in order to maintain a proper temperature within the incubator. The electric fan is positioned in an auxiliary casing 9 and includes a small motor 10 to the central shaft of which is attached a fan 11 surrounded by a fan casing 12. Suitable sources of a difference of potential such as 13 are provided to furnish the motive power to the motor 10 being connected directly thereto in one instance by the wire 14 and indirectly in the other instance as shall be hereinafter more fully described.

Secured to the inner wall of the incubator 5 immediately adjacent one end of the outer casing 9 is a longitudinally extending air pan 15 which is apertured along its bottom as at 16 for communication with the interior of the incubator.

A pair of air circulating pipes 17 and 18 are longitudinally positioned within the pan 15 and pass [illegible] therefrom through the wall [illegible]

To all whom it may concern:

Be it known that I, ROY F. FULLINGTON, citizen of the United States, residing at Clifton Hill, in the county of Randolph and State of Missouri, have invented certain new and useful Improvements in Incubator Attachments, of which the following is a specification.

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The above and additional objects which will become apparent as this explanatory description proceeds, are accomplished by such means as are illustrated in the accompanying drawings, described in the following specification, and then more particularly pointed out in the claims which are appended hereto and form a part of this application.

With reference to the drawings, wherein there is illustrated the preferred embodiment of this invention as it is reduced to practice, and throughout the several views of which like characters of reference designate similar parts: Figure 1 is a plan view of an incubator with the cover and the egg trays removed, showing the various attachments comprehended by this invention as properly positioned. Fig. 2 is a sectional view through the air supply and removing means. Fig. 3 is a perspective view of the fan casing, and Fig. 4 is a view showing in detail the operation of the thermostat replacing means, or the automatic regulator. Fig. 5 is a detail sectional view on the line 5—5 of Fig. 1.

With reference to the drawings the numeral 5 denotes the inclosing body portion of an incubator or brooder which may be supported in any usual manner as indicated at 6 and which is provided with a hinged closure 7, here illustrated as in its outwardly swung position. The interior of the casing 5 is adapted to be filled with rows or tiers of egg trays, which may be of the usual construction positioned in the customary manner. It is purposed by this invention to provide an electric fan 8 which shall be intermittently actuated as the amount of heat entering into the incubator shall dictate in order to maintain a proper temperature within the incubator. The electric fan is positioned in an auxiliary casing 9 and includes a small motor 10 to the central shaft of which is attached a fan 11 surrounded by a fan casing 12. Suitable sources of a difference of potential such as 13 are provided to furnish the motive power to the motor 10 being connected directly thereto in one instance by the wire 14 and indirectly in the other instance as shall be hereinafter more fully described.

Secured to the inner wall of the incubator 5 immediately adjacent one end of the outer casing 9 is a longitudinally extending air pan 15 which is apertured along its bottom as at 16 for communication with the interior of the incubator.

A pair of air circulating pipes 17 and 18 are longitudinally positioned within the pan 15 and pass outwardly therefrom through the wall 5 of the incubator at a convenient point to enter the fan chamber 9. Through one of these pipes 17 warm foul air passes from the incubator and escapes through an opening 17^a in the pipe 17 into the fan chamber 9 or by a branch pipe outside the machine. An inclined partition 17^b is placed in the pipe 17 and divides the same just behind the opening 17^a so as to direct the path of air to the opening. The pipe 17 for convenience is continued rearwardly a short distance and then turned to connect with the eye of the fan 11. A branch pipe 20 extends from the turn of the pipe 17 and passes through the wall of the fan chamber 9, opens into the air without and thus provides means whereby fresh air enters the fan when the latter is running, said air being forced through the pipe 18 into the incubator. A conduit pipe 19 depends from the inner end of the pipe 17 directly above the tray 15 for the purpose of forming a broad

opening or inlet by which air may be directed into the pipe.

The automatic regulating means whereby the operation of a fan may be controlled to maintain a practically constant temperature in the incubator is illustrated more particularly in Fig. 4. In this figure, the numeral 21 designates a heater formed of a number of heating chambers, one of which 22 is adapted to contain the heating element 23 which as here shown may be a lamp, although it is obvious that any other means such as gas or electricity could be employed with equal facility for this purpose. The heating chamber 22 is apertured as at 24 in order to permit the damper 25 to be loosely dependent therein, such damper being carried at the end of a movable rod 26 which is secured to a support 27 which may be one of the egg trays if so desired in any suitable pivotal manner, although a specific description of a simple and novel means will be here afforded. The rod 26 may be formed with an eye 28 at its supported end, the said eye being embraced by a staple or other fastening means 29 so that the eye is maintained in a vertical plane and free to rotate slightly therein upon the obvious rounded portion, although frictionally resisting such rotation sufficiently to normally support the light damper 25 in a manner very sensitive to varying degrees of surrounding pressure.

A support 30 provided with securing extensions 31 is suitably mounted in the interior of the incubator in the most convenient position where it will be readily accessible and yet not occupy space desired for other purposes. One of the extensions 31 is provided with a threaded aperture to receive the stem 32 of an adjusting means 33, the upper end of which bears a rubber washer 34 or other suitable insulation. At 35 and 36 respectively there are pivoted a pair of arms 37 and 38 the former carrying a weight 39 at one end, in order to normally depress the latter while the arm 37 is formed with an enlarged contact member 40 and is adapted to engage the latter when the damper 25 is lifted by the heated air, whereby a circuit is completed upon the contacting of the levers 37 and 38.

An increase of heat generated by the element 23 might very easily prove detrimental to the contents of the incubator, yet before such heat could do harm in the presence of this invention the damper 25 would necessarily be buoyed up causing a contact between the pivoted arms and a completion of the circuit through the fan, which would then be actuated to force cool air into the casing through pipe 18 and drive out the foul air through the pipe 17. On the other hand should the temperature of the incubator become too low, it will be seen that the cause for this will be the failure of the heat generated by the lamp 23 from exerting an buoyant effect upon the damper 25, which as explained will cause a slackening in the connections 41, so that the connection will be broken between the pivoted arms and the heat again free to raise the temperature of the incubator without being disturbed or lessened by the rotation of the fan. It will thus be seen that efficient means have been provided capable of replacing the usual costly thermostat while at the same time forming a reliable automatic regulator for the heating of an incubator or brooder thereby attaining the previously presented objects.

While in the foregoing however, there has thus been illustrated in the drawings and described in the specification, such combination and arrangement of elements as constitute the preferred embodiment of this invention, it is desired to emphasize the fact that such minor changes in the matters of form, portion and degree may be made in the adaptations of this device as shall be within the spirit of the invention as defined by the appended claims.

What is claimed is:

1. An incubator attachment including an exhaust pipe for the air of said incubator, an inlet pipe therefor, a fan for circulating air through both of said pipes, a heating element for said incubator, means [illegible] the amount of heat generated by [illegible] amount of heat [illegible]

22 is adapted to contain the heating element 23 which as here shown may be a lamp, although it is obvious that any other means such as gas or electricity could be employed with equal facility for this purpose. The heating chamber 22 is apertured as at 24 in order to permit the damper 25 to be loosely dependent therein, such damper being carried at the end of a movable rod 26 which is secured to a support 27 which may be one of the egg trays if so desired in any suitable pivotal manner, although a specific description of a simple and novel means will be here afforded. The rod 26 may be formed with an eye 28 at its supported end, the said eye being embraced by a staple or other fastening means 29 so that the eye is maintained in a vertical plane and free to rotate slightly therein upon the obvious rounded portion, although frictionally resisting such rotation sufficiently to normally support the light damper 25 in a manner very sensitive to varying degrees of surrounding pressure.

A support 30 provided with securing extensions 31 is suitably mounted in the interior of the incubator in the most convenient position where it will be readily accessible and yet not occupy space desired for other purposes. One of the extensions 31 is provided with a threaded aperture to receive the stem 32 of an adjusting means 33, the upper end of which bears a rubber washer 34 or other suitable insulation. At 35 and 36 respectively there are pivoted a pair of arms 37 and 38 the former carrying a weight 39 at one end, in order to normally depress the latter while the arm 38 is formed with an enlarged contact portion 40 and is adapted to be adjustably supported by the screw 33. Flexible connections 41 are suitably interposed between the damper arm 26 and the free extremity of the weighted arm 37, so that depression of the damper arm will loosen or cause a slack in the connection 41 to permit the weight 39 to remove the weighted end of the arm 37 from the vicinity of the enlarged contact 40 while conversely elevation of the damper 25 would immediately insure a contact between the adjacent extremities of the arms 37 and 38. Suitable leads 42 connect the source of difference of potential 13 directly with the arm 37 while a similar wire 43 operatively connects the arm 38 with the remaining point of contact on the electric fan 8 so that a circuit through the fan, which ... then be actuated to force cool air into t... casing through pipe 18 and drive out t... foul air through the pipe 17. On the oth... hand should the temperature of the incub... tor become too low, it will be seen that t... cause for this will be the failure of the he... generated by the lamp 23 from exerting a... buoyant effect upon the damper 25, which ... explained will cause a slackening in the co... nections 41, so that the connection will b... broken between the pivoted arms and th... heat again free to raise the temperature o... the incubator without being disturbed a... lessened by the rotation of the fan. It wi... thus be seen that efficient means have be... provided capable of replacing the u... costly thermostat while at the same ti... forming a reliable automatic regulator f... the heating of an incubator or brooder th... by attaining the previously presented ob...

While in the foregoing however, there h... thus been illustrated in the drawings a... described in the specification, such com... tion and arrangement of elements as co... tute the preferred embodiment of this in... tion, it is desired to emphasize the fact ... such minor changes in the matters of ... portion and degree may be made in ... adaptations of this device as shall not ... the spirit of the invention as defined i... appended claims.

What is claimed is:

1. An incubator attachment includ... exhaust pipe for the air of said in... an inlet pipe therefor, a fan for cir... air through both of said pipes, a h... ment for said incubator, means s... the amount of heat generated by ... ment, adjustable means for con... automatic operation of said se... in regulating the amount of heat ... and means connected with said ... means and interconnected with ... cause actuation of the latter u... crease of heat beyond said ma...

2. In combination, with a he... a damper mounted in the path o... gases generated by said el... ed to be actuated by the flow of ... gases, a pair of pivoted arms, m... justing one of said arms, mean... the other of said arms and te... vent contact of the two, connecti... said damper and said second a... a contact of said arms upon ...

damper, an air pan apertured longitudinally, an outlet pipe spaced from said air pan to draw heated air therefrom, an inlet pipe positioned in said pan to convey a cooler air, and fan means for circulating air through said inlet and outlet pipes in a circuit set in motion by the contact between said arms caused by said damper.

3. The combination with an apertured tray of a pipe serving as an air outlet from said tray, an air inlet for said tray, a fan for circulating air through both of said pipes simultaneously to cool the tray, a heating element, a damper sensitively pivoted in the path of the heated gases from said element for actuation by the flow thereof, a support, arms separately pivoted to said support, adjustable means supporting one of said arms weight means carried by the other of said arms to prevent a contact between the arms, a flexible connection between said weight arm and the sensitive mounting for said damper to cause a contact between the arms upon movement of the damper in one direction and permitting said weight means to break the contact of said arms in the other direction and a circuit closed by contact between said arms for the operation of said fan.

In testimony whereof I affix my signature in presence of two witnesses.

ROY F. FULLINGTON.

Witnesses:
TOM BOWEN,
MARY SEARS.

Date of Application, 23rd July, 1887
Complete Left, 23rd Apr., 1888
Complete Accepted, 26th May, 1888

A.D. 1887, 23rd JULY. N° 10,288.

PROVISIONAL SPECIFICATION.

Improvements in and relating to Incubators.

I, JOHN GARDNER, of Hadfield, in the County of Derby, dealer in Type-writing machines do hereby declare the nature of this invention to be as follows:—

This invention relates to incubators, and has for its objects to secure continuous operation and greater certainty in the results.

As incubators are at present constructed and employed, the full charge of eggs is placed in the apparatus at once and the whole of the chickens hatched therefrom have therefore to be handled and dealt with simultaneously and as they are all of about the same age, many of them will require to be fed longer than is necessary.

My improvements consist in so constructing and operating the Incubator and its accessories that chickens may be hatched and withdrawn therefrom daily or at any less frequent intervals as may be required.

The Incubator constructed according to these Improvements consists of a series of compartments or chambers within which are fitted drawers for containing the eggs. Care is taken in construction that all the drawers are interchangeable. I have found by experiment that the external or artificial heat required for hatching gradually diminishes from the first day, the total difference being about three degrees. I therefore arrange that each chamber or compartment shall be continuously maintained at the same temperature and that succeeding or different chambers shall have different [illegible] temperatures so that the drawers containing the eggs may be periodically removed from the higher temperature chambers to the lower until they have passed through the whole series of chambers and are finally hatched in the chamber [illegible] lowest temperature. Thus, without limiting myself to any particular [illegible] of chambers, the first chamber may have a constant temperature of 105 deg. F.; the second 103.5 deg.; the third 104 deg.; the fourth 103.5 deg.; the fifth 103 deg.; the sixth 102.5 deg.; and the seventh and last 102 deg. In such an arrangement [illegible] would be hatched continuously, and fresh eggs may be placed in the [illegible] of the apparatus daily, for which purpose it will be convenient to [illegible] three or a multiple of three drawers in each chamber so that each day's [illegible] may be separately transferred to the following chambers.

[illegible]

Gardner's Improvements in and relating to Incubators.

Each of the chambers or compartments communicates with a flue which is connected to an exhaust fan, an aspirator or other means for withdrawing air. The openings from the chambers or compartments are opened or closed by a valve the movement of which is controlled by any suitable thermostat, but preferably is constructed as follows: the ends of a curved strip or bar of metal or of a compound bar or strip of metal or metals are firmly secured to a suitable base. To about the centre of the curved bar one end of a light rod is adjustably secured and the other end of the rod is connected or geared to the spindle of the valve. In the event of a slight variation of the temperature the bar tends to increase or diminish in length, its ends being rigidly fixed, this tendency results in an increase or diminution in its curvature, and by the motion so set up the position of the valve is controlled. The exact temperature required is secured by the amount of air passing through the compartment, and this is governed by regulating the adjustable connection of the rod with the curved bar. This having been regulated once, will require no further regulation for a long period.

The heat supply of the whole apparatus may be derived from any source ordinarily employed and controlled by any usual means or by the hereinbefore described thermostat which may be employed to operate a valve or to control the gas supply when gaseous fuel is used.

Dated this 22nd day of July A.D. 1887.

WILLIAM E. HEYS,
Agent for the Applicant.

COMPLETE SPECIFICATION.

Improvements in and relating to Incubators.

I, JOHN GARDNER, of Hadfield, in the County of Derby, dealer in type-writing machines do hereby declare the nature of this invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to Incubators and has for its objects to secure continuous operation and greater certainty in the results.

As incubators are at present constructed and employed the full charge of eggs is placed in the apparatus at once and the whole of the chickens hatched therefrom have therefore to be handled and dealt with simultaneously, and as they are all of about the same age, many of them will require to be fed longer than is necessary.

My Improvements consist in so arranging and operating the incubator and its accessories that chickens may be hatched and withdrawn therefrom daily or at any other convenient intervals as may be desired.

The incubator constructed according to these improvements consists of a series of compartments or chambers, within which are fitted drawers for containing the eggs. Care is taken in construction that all the drawers are interchangeable. I have found by experiment that the external or artificial heat required for hatching gradually diminishes from the first day, the total difference being about 3 deg. I therefore arrange that each chamber or compartment shall be continuously maintained at the same temperature and that succeeding or different chambers shall have different successive temperatures, so that the drawers containing the eggs may be periodically transferred from the high temperature chambers to the lower, until they have passed through the whole series of chambers and are finally hatched in the chamber having the lowest temperature. Thus, without limiting myself to any particular mode of construction or number of chambers, the first chamber may have a constant temperature of 105 deg. F.; the second 104.5 deg. the third 104 deg.; the fourth 103.5 deg.; the fifth 103 deg.; the sixth 102.5 deg.; and the seventh and last 102 deg. F. In such an arrangement the chickens would be hatched continuously, and fresh eggs may be placed in the first compartment of the apparatus daily, for which purpose it will be convenient to arrange for three or a multiple of three drawers in each chamber so that each day's eggs may be kept separate and be separately transferred to the following chamber on following days.

Each of the chambers or compartments communicates with a flue which is connected to an exhaust fan, an aspirator or other means for withdrawing air. The openings or exit from the chambers or compartments may be opened or closed by a valve, the movement of which is controlled by any suitable thermostat but preferably by a thermometer constructed as follows:—the ends of a curved strip or bar of metal or of a composite bar or strip of metals or metal are firmly secured to a suitable base. To about the centre of the curved bar, one end of a light rod is attached, and the other end of the rod is connected or geared to the air

of the valve. In the event of a slight variation in the temperature the bar tends to increase or diminish in length, but its ends being rigidly fixed, this tendency results in an increase or diminution in its curvature and by the motion so set up, the position of the valve is controlled. The exact temperature required is secured by the amount of air passing through the compartment and this is governed by regulating the adjustable connection of the rod with the curved bar. This having been regulated once, will require no further regulation for a long period.

The heat supply of the whole apparatus may be derived from any source ordinarily employed and controlled by any usual means or by the hereinbefore described thermostat which is of known construction and may be employed to operate a valve or to control the gas supply when gaseous fuel is used.

I desire it to be understood that I do not claim as constituting any part of this my said Invention, any particular type or construction of an incubator or of apparatus for regulating heat therein, since these are generally well known; and that I limit myself to the arrangement and operation of a series of incubating chambers or chambers containing incubators.

Having now particularly described and ascertained the nature of my said Invention and in what manner the same is to be performed, I declare that what I claim is:—

The Improvements in and relating to incubators substantially as hereinbefore described which consist in the arrangement and operation of a series of incubating chambers or chambers containing incubators heated by air set in motion by artificial means, each of the series after the first being kept at a slightly lower temperature than the preceding chamber and the eggs being periodically transferred through the series from the chamber having the highest to that having the lowest temperature.

Dated this 20th day of April A.D. 1888.

WILLIAM E. HEYS,
Agent for the Applicant.

LONDON: Printed for Her Majesty's Stationery Office,
By DARLING AND SON, LTD.
1888.

1007

KAISERLICHES PATENTAMT.

DEC. 6

VERÖFFENTLICHT DEN 14. NOVEMBER 1904.

PATENTSCHRIFT

— № 155917 —

KLASSE 45 h.

E. STULIK IN LICHTENBERG B. BERLIN.

Brutverfahren und Vorrichtung mit gruppenweiser Beschickung und gleichzeitiger Behandlung der zu verschiedenen Zeiten in den Brutapparat eingesetzten Eiergruppen.

Patentiert im Deutschen Reiche vom 7. November 1901 ab.

Bei den bisher bekannten Brutverfahren mit gruppenweiser Beschickung der verschiedenen Abteilungen des Brutapparates und gleichzeitiger Behandlung der zu verschiedenen Zeiten in die Brutvorrichtung eingesetzten Eiergruppen ist auf die Erhaltung einer gleichförmigen Temperatur im ganzen Brutraum zu wenig Rücksicht genommen. Bei den bekannten Verfahren dieser Art werden die einzelnen, zu verschiedenen Zeiten einzusetzenden Gruppen mit Bezug auf die Heizmittelführung parallel geschaltet. Entweder werden dabei die einzelnen Eierträger in einem von einem aufsteigenden Warmluftstrom durchzogenen Brutraum nacheinander in gewissen Zeitabschnitten seitlich verschoben, bis sie den ganzen Brutraum durchwandert haben, oder aber es wird eine Reihe zu verschiedenen Zeiten zu belegender Eierträger unter einem Warmwasserkessel angeordnet und während der Brutzeit jeder Eierträger für sich in passende Entfernung vom Heizkessel gebracht. Im ersten Fall wird der gegen Ende der Brütezeit wachsenden Eigenwärme der Eier nicht genügend Rechnung getragen, während im letzteren Fall, wo der oben im Brutraum angeordnete Warmwasserkessel den Brutraum durch Strahlung heizt, nach oben zu ein zu rascher Temperaturabfall eintritt, so daß nicht genügend viel Abteilungen für die Veränderung der Stellung der Eierträger während der Brütezeit vorgesehen sind. Demgegenüber werden gemäß der vorliegenden Erfindung die zu verschiedenen Zeiten in den Brutraum eingesetzten Eiergruppen immer unmittelbar ein und demselben Warmluftstrom ausgesetzt, und zwar derart, daß die Eiergruppen fortschreitend oder stufenweise in der Richtung des Warmluftstromes von der Wärmequelle entfernt werden, so daß die einzelnen Gruppen schließlich den ganzen Brutraum durchwandern. Hierdurch wird erreicht, daß die zuerst frisch in den Brutraum gebrachten Eiergruppen der vollen Wärme des Warmluftstroms ausgesetzt sind, während die älteren und im Brutraum weitergerückten Eiergruppen dem Warmluftstrom erst ausgesetzt werden, nachdem dieser bereits einen Teil seiner Wärme abgegeben hat. Es ist dadurch die Möglichkeit gegeben, daß unter Berücksichtigung der von den Eiern bei vorgeschrittenem Brüten entwickelten Eigenwärme in allen Abteilungen des Brutraumes eine gleichförmige Temperatur herrscht, indem in den über- oder nebeneinander liegenden Abteilungen die dem Warmluftstrom entzogene Wärme durch die Eigenwärme der Eier ergänzt wird. Es wird somit verhütet, daß die älteren Abteilungen einem zu hohen Wärmegrad ausgesetzt werden.

Die für das neue Brutverfahren eingerichteten Vorrichtungen bieten insbesondere für kleinere Betriebe den Vorteil, daß während des Ganges der Vorrichtung in bestimmten kleineren Zeiträumen frische Eiergruppen eingelegt werden können. Zweckmäßig befinden sich die verschiedenen Abteilungen übereinander, weil hierdurch einerseits eine günstige Verbindung der Vorrichtung mit dem als Glucke dienenden Raum und andererseits eine günstige Durchlüftung, also eine wirk-

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13 S, 717

same Ableitung der aus den bebrüteten Eiern sich entwickelnden Gase ermöglicht wird.

Auf der Zeichnung ist die neue Brutvorrichtung veranschaulicht, und zwar zeigt Fig. 1 die Vorderansicht bei teilweisem Schnitt, Fig. 2 den Längenschnitt, Fig. 3 den Querschnitt nach *A-A* von Fig. 1, Fig. 4 den Querschnitt nach *B-B* von Fig. 2; Fig. 5 zeigt schematisch eine abgeänderte Ausführungsform.

Bei der Ausführung Fig. 1 bis 4 sind in dem Brutraum *a* die Kästen *b* übereinander angeordnet. Die erwärmte Brütluft tritt durch das Rohr *c* unter den untersten Brutkasten. Die Kästen *b* sind mit Durchlochungen versehen, welche der erwärmten Luft das Aufsteigen durch alle durch die Kästen *b* gebildeten Abteilungen gestattet. Die oberste Abteilung ist mit dem Luftabzug *d* versehen. Der Brutraum *a* besitzt auf der einen Seite die den Kästen *b* entsprechenden, übereinander angeordneten Türen *f* (Fig. 2). Die Brutkästen *b* können einzeln herausgenommen werden. Der Brutraum *a* ist zweckmäßig von einem Mantel *w* zur Aufnahme erwärmten Wassers umgeben, um Wärmeabgabe nach außen zu verhindern. Eine äußere Tür *g* vor den Türen *f* kann als Schutz gegen Wärmeausströmung durch die Türen *f* angeordnet sein, wie Fig. 2 zeigt. Die Einrichtungen zum Schutze gegen Wärmeabgabe nach außen gehören nicht unmittelbar zur vorliegenden Erfindung.

Bei der dargestellten Ausführung befindet sich der Brutraum *a* über dem bekannten, als Glucke dienenden Behälter *h*. Innerhalb dieses Behälters *h* liegt die Heizkammer *i*, die von irgend einer Wärmequelle, wie Pfeil *k* andeutet etwa durch eine bei *s* aufgestellte Lampe, mit heißer Luft beschickt wird. Ein nach außen führender Abzug für die Heizgase kann bei *l* vorgesehen sein.

Das Luftzuführrohr *c* ist durch die Kammer *i* hindurchgeführt. Die Heizgase strömen aus dem Raum *i* durch eine Öffnung *m* in die Kammer *y* und verteilen sich von hier in die Röhren *n*, die das Wasser im Mantel *w* erwärmen. Die Gase sammeln sich schließlich wieder im Raum *x*, um von hier aus bei *v* abzuziehen.

Beim Betrieb wird zunächst die unterste Brutabteilung beschickt und nach einiger Zeit der unterste Brutkasten mit den Eiern herausgenommen und in die nächst obere Abteilung gebracht. Die Eier könnten auch einfach in die nächst obere Abteilung herübergelegt werden. Dann folgt die erneute Beschickung der untersten Abteilung. Dieser Vorgang wiederholt sich, so daß allmählich die einzelnen Gruppen bis nach der oben Abteilung gelangen. Mit dem Luftabzug kann in bekannter Weise eine Vorrichtung verbunden sein, die abhängig von der Wärme in der obersten Brutabteilung die Beheizung mittels der Hebelübersetzung *p* regelt, indem sie die Verschlußklappe *q* für den Abzug der Heizkammer *i* mehr oder weniger öffnet oder schließt.

Die beschriebene Brutvorrichtung läßt sich in ihren Einzelheiten abändern. Wie Fig. 5 zeigt, können die Abteilungen 1 bis 7, welche nacheinander von dem Warmluftstrom und von den Eiern durchwandert werden, nebeneinander angeordnet sein. In jedem Falle ist es wesentlich, daß die von den Eiern mit der Zeit entwickelte Eigenwärme für die gleichmäßige Erhaltung der Temperatur im ganzen Brutraum berücksichtigt wird. Die Anordnung eines Heizmantels ist für das Verfahren nicht unbedingt erforderlich, derselbe verhindert aber Unregelmäßigkeiten durch Wärmestrahlung nach außen. Durch die beschriebene Vorrichtung wird vor allem vermieden, daß die Eier gegen Ende der Brütezeit einem zu hohen Wärmegrade ausgesetzt sind.

Patent-Ansprüche:

1. Brutverfahren mit gruppenweiser Beschickung und gleichzeitiger Weiterschaltung der zu verschiedenen Zeiten in den Brutapparat eingesetzten Eiergruppen, dadurch gekennzeichnet, daß die in den Brutraum zu verschiedenen Zeiten eingesetzten Eiergruppen demselben Warmluftstrom unmittelbar in der Weise ausgesetzt werden, daß die Eiergruppen gruppenweise in der Richtung des Warmluftstromes in größere Entfernung von der Wärmequelle gebracht werden, wobei zuerst die frisch in den Brutraum gebrachte Eiergruppe und dann nacheinander die älteren Gruppen bestrichen vom Warmluftstrom auf die einzelnen Eiergruppen so viel Wärme überträgt, daß unter Berücksichtigung der zu der Zeit verschiedenen Eigenwärmen der Eier im ganzen Brutraum eine gleichförmige Temperatur herrscht.

2. Brutvorrichtung zur Ausführung des Verfahrens nach Anspruch 1, dadurch gekennzeichnet, daß die zur gruppenweisen Weiterschaltung der Eier dienenden, der Brütluft freien Zutritt zu den Eiern gestattenden Eierträger, welche die von dem Warmluftstrom nacheinander durchwanderten Einzelabteilungen bilden, nebeneinander angeordnet sind.

Hierzu 1 Blatt Zeichnungen.

BERLIN, GEDRUCKT IN DER REICHSDRUCKEREI.

Fig. 1.

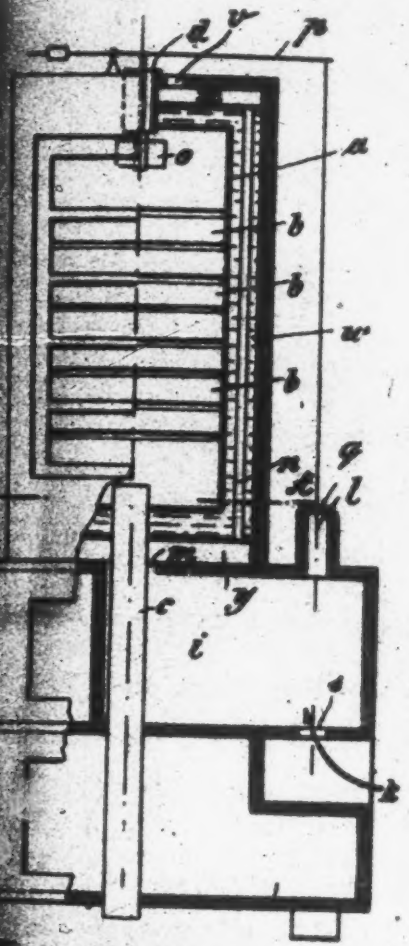


Fig. 2.

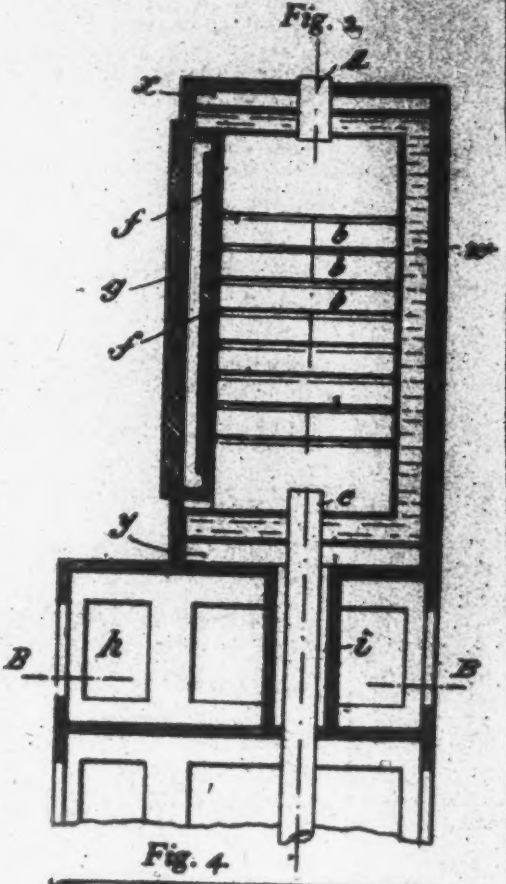


Fig. 3.

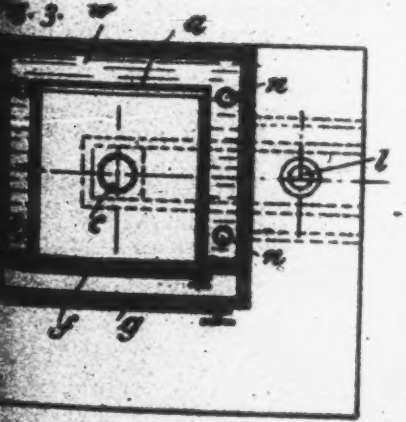


Fig. 4.

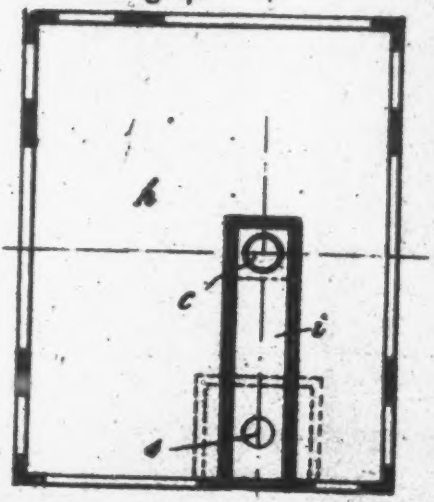


Fig. 5.

№ 155917.

[fol. 1299] DEFENDANTS' EXHIBIT No. 9

Translation German Patent

Translation

Translation from German
CVB ESF

German Patent Office

Letters Patent No. 155917

Class 45 h.

E. STULIK in LICHTENBERG NEAR BERLIN

Incubating Method and Appliance with Feeding in Batches and Simultaneous Treatment of the Batches of Eggs Placed at Different Times in the Incubator

Patented in Germany as from November 7th, 1901

In connection with the incubating (hatching) processes hitherto used in which the different compartments of the incubator were filled in batches and in which the batches of eggs placed in the incubator at different times were treated simultaneously, not sufficient attention has been given to the maintenance of a uniform temperature throughout the entire incubator space. In connection with the known processes of this kind, the individual batches to be inserted at different times are arranged in parallel with regard to heat emission. In this connection either the individual egg carriers, in a hatching space (incubating space) through which the air current passes upward from below are either [fol. 1300] shifted laterally one after the other at certain intervals until they have passed through the entire hatching space or a series of egg carriers in which the eggs are to be placed at different times are arranged below a hot water boiler and during the hatching time each egg carrier successively is placed at a suitable distance from the heating boiler. In the former case, not sufficient consideration is given to the natural heat of the eggs which increases towards the end of the hatching period while in the latter case,

which connection the hot water boiler arranged above the hatching space, heats the hatching space by radiation which connection there takes place in the downward direction a too rapid decrease in the temperature so that there are not sufficient stages provided for the changing of the position of the egg carriers during the hatching period.

On the other hand and in accordance with the invention under consideration, the batches of eggs entered into the hatching space at different times are always directly exposed to one and the same hot air current in such a manner that the batches of eggs are removed progressively or in stages in the direction of the hot air current from the source of heat so that the individual groups finally have passed through the entire hatching space. In this way it is made possible that the fresh batches first entered in the hatching space are exposed to the full heat of the hot air current while the older batches of eggs which have already been shifted ahead in the hatching space are only exposed to the hot air current after same has already given off a part of its heat. In this way it is made possible that [Vol. 1301] under due consideration of the natural heat developed by the eggs during the advanced stages of the hatching, a uniform temperature prevails in all compartments of the hatching space inasmuch as in the sections on top or alongside, the heat of which the warm air current is deprived, is replaced by the natural heat of the eggs. In this manner, it is prevented that the older batches are exposed to an excessively high degree of heat.

The devices or appliances arranged for the new hatching process, especially in the case of small plants, offer the advantage that during the operation of the apparatus, at certain intervals of time, fresh batches of eggs can be introduced. The different compartments are suitably arranged above each other for the reason that in this manner on the one hand a favorable connection of the devices with the compartment serving as brood hen while on the other hand there is made possible a favorable ventilation, i. e. an effective removal of the gases developing from the eggs to be hatched.

The illustration shows the new hatching device (incubator) viz. Figure 1 shows a front view with partial section; Figure 2 shows the [illegible] egittudinal section; Figure

shows the cross-section in the direction of A-A of Figure 1; Figure 4 shows the cross-section in the direction of B-B of Figure 2; Figure 5 shows a different manner of execution schematically.

In connection with the execution of Figure 1-4 the trays (b) are arranged on top of each other in the hatching space (a). The heated hatching air enters through the tube or conduit (c) under the lowest hatching tray. The trays (b) [fol. 1302] are provided with perforations which make it possible for the heated air to pass upwards through all the compartments formed by the trays (b). The uppermost compartment is provided with the air outlet (d). The hatching space (a) is provided, on the one side, with doors (f) (Figure 2), arranged on top of each other and corresponding to the trays (b). The hatching trays (b) can be removed individually. The hatching space (a) is surrounded suitable by a jacket (w) for the receiving of heated water in order to prevent any radiation of heat toward the outside. An outer door (g) in front of the door (f) may be arranged, as protection against heat radiation through the doors (f) as in Figure 2. The devices for the protection against heat radiation toward the outside are not a direct part of the invention under consideration.

In connection with the mode of construction, illustrated the hatching space (a) is located above the known container (h) serving as brood hen. Within this container (h) there is arranged the heating chamber (i) which is fed by means of any source of heat with hot air as indicated by arrow (k), for instance by a lamp located at s. The outlet leading toward the outside for the heating gases can be provided at I.

The air feed tube (c) is led through the chamber (i). The heating gases pass out of the space (i) through an opening (m) into the chamber (y) and thence are distributed in the tubes (n) which heat the water in the jacket (w). The gases collect finally again in space (x) whence they escape at v.

In operation, the eggs are first placed in the lowest hatching compartment and after some time the lowest hatching [fol. 1303] tray with the eggs is taken out and placed in the next highest compartment. The eggs can also simply be transferred into the next higher compartment. Thereupon

the eggs are again placed in the lowest compartment. This process is repeated so that slowly the individual batches reach the uppermost compartment. With the air outlet (d) there can be connected in the known manner a device (e) which regulates (this depending on the heat prevailing in the uppermost hatching compartment) the heating by means of the lever transmission (p) by opening or closing to a more or less considerable extent the shutting-off valve (q) for the outlet (l) of the heating chamber (i).

The hatching or incubating device described can be changed with regard to its individual parts. As shown in Figure 5, the compartments 1-7 through which the hot air current and the eggs pass consecutively may be arranged alongside of each other. In any event it is of material importance that the natural heat developed by the eggs in the course of the hatching, is taken into due consideration for the uniform maintenance of the temperature throughout the entire hatching space. The arrangement of a heating jacket is not absolutely necessary for the process. Same prevents, however, irregularities caused by radiation of heat toward the outside. By the device describd it is prevented above all that the eggs, at the end of the hatching period, are exposed to a too high degree of heat.

Patent Claims

(1) Hatching Process with entering of the eggs in batches and simultaneous treatment of the different [fol. 1304] batches of eggs introduced into the incubator at different times, characterised in that the batches of eggs introduced into the hatching space at different times are exposed directly to the same hot air current in the manner that the batches of eggs, in different stages are arranged in the direction of the hot air current at a gradually increasing distance from the source of heat, in which connection the hot air current passes first over the batch of eggs freshly introduced into the hatching space and consecutively the older batches of eggs imparting to the individual batches of eggs such an amount of heat as is required, taking into due consideration the natural heat of the eggs which differs at the various periods of time so that in the entire hatching space a uniform temperature prevails.

(2) Incubating or Hatching Device for the carrying out of the process in accordance with claim 1 characterized in that the egg trays serving for the moving of the batches of eggs and freely admitting the hatching air to the eggs and forming the individual compartments through which the hot air current passes consecutively are arranged alongside each other or above each other.

Hereto attached one sheet of drawings.

1017

C. C. PECK.

AUTOMATIC FAN SYSTEM OF HEATING.

APPLICATION FILED MAR. 3, 1909.

917,483.

Patented Apr. 6, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

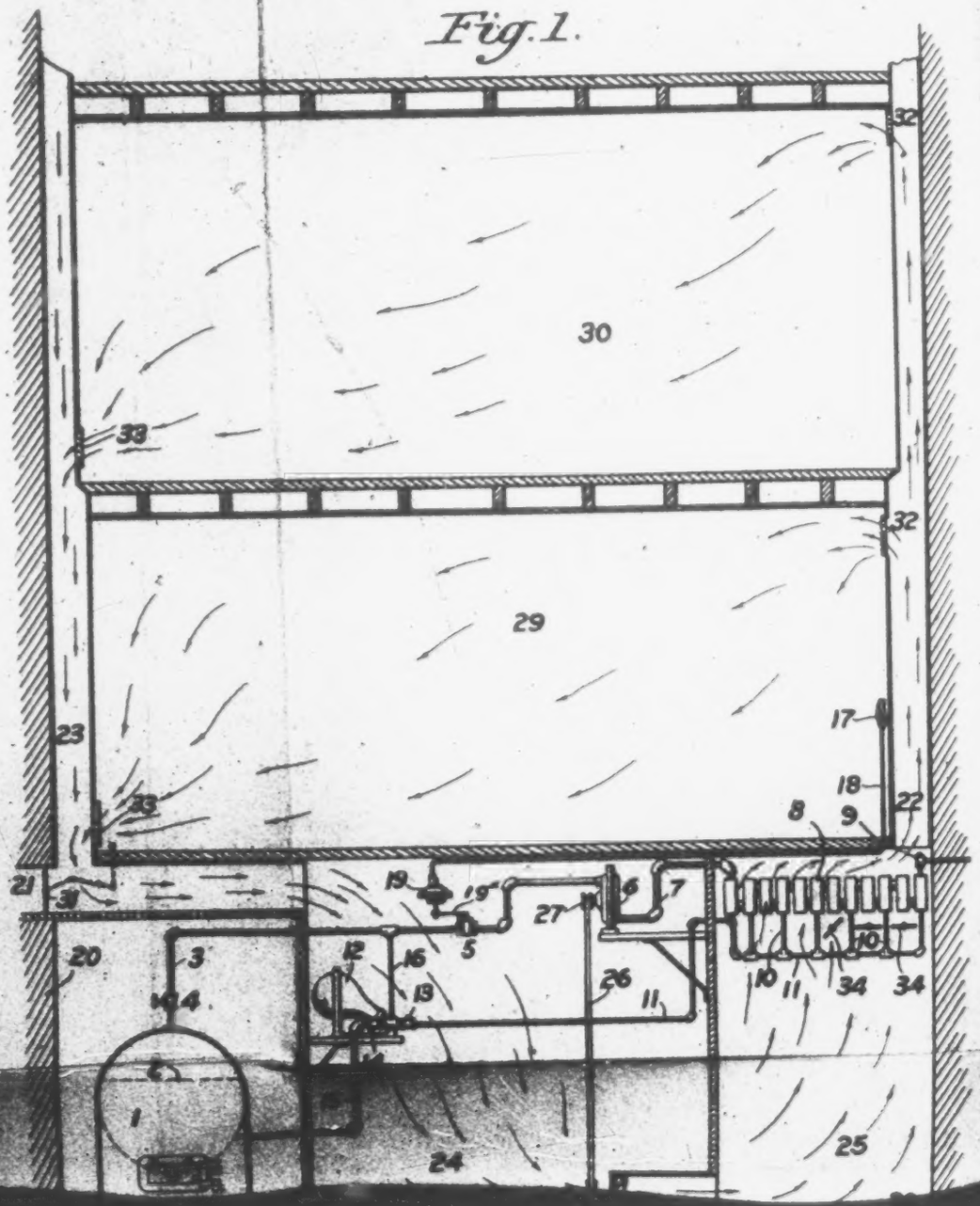
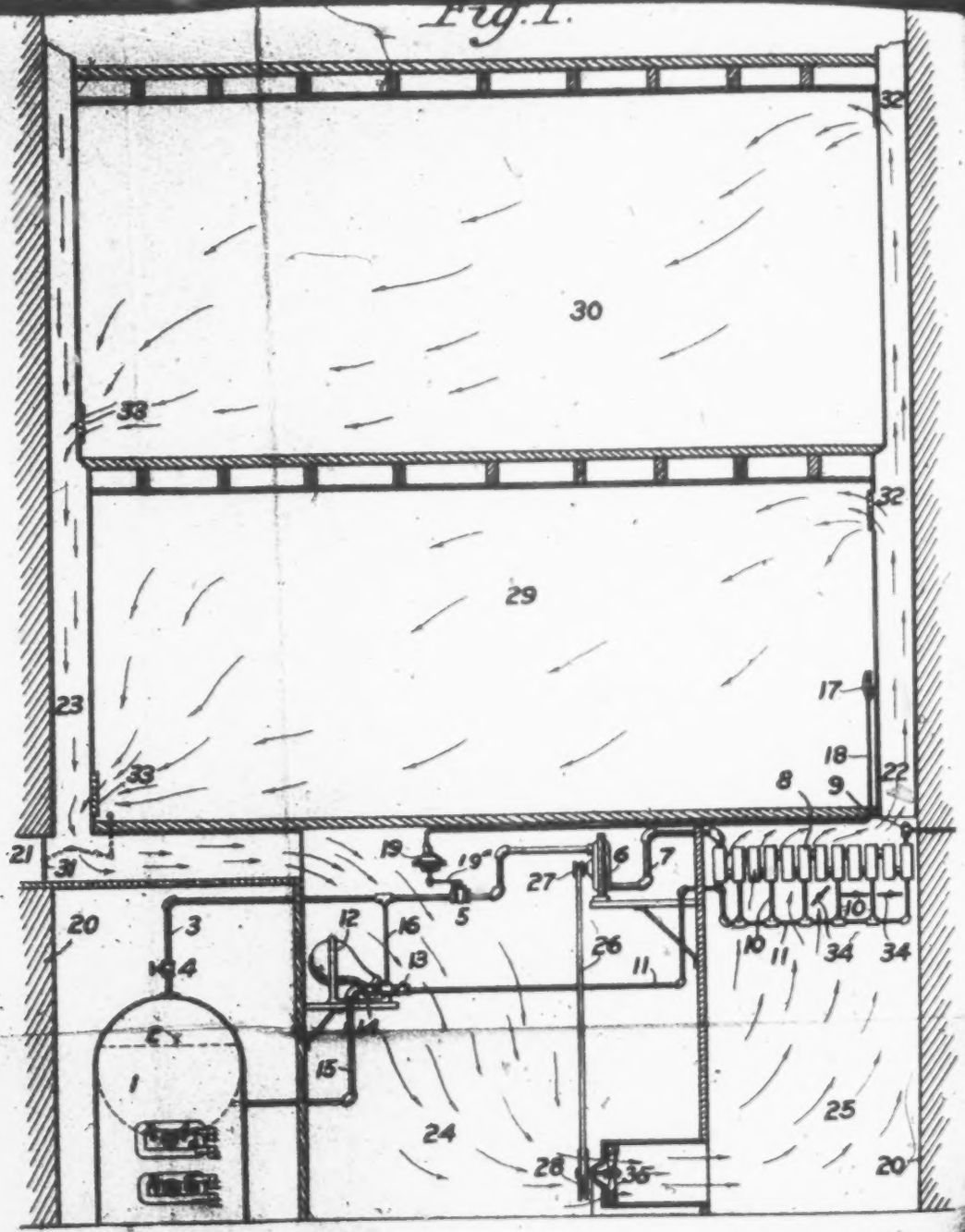


Fig. 1.



WITNESSES:
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Clarence W Carroll

INVENTOR:
Cassius Carroll Peck

1018

C. O. PECK.

AUTOMATIC FAN SYSTEM OF HEATING.

APPLICATION FILED MAR. 3, 1908.

917,483.

Patented Apr. 6, 1909.

2 SHEETS—SHEET 2.

FIG.2.

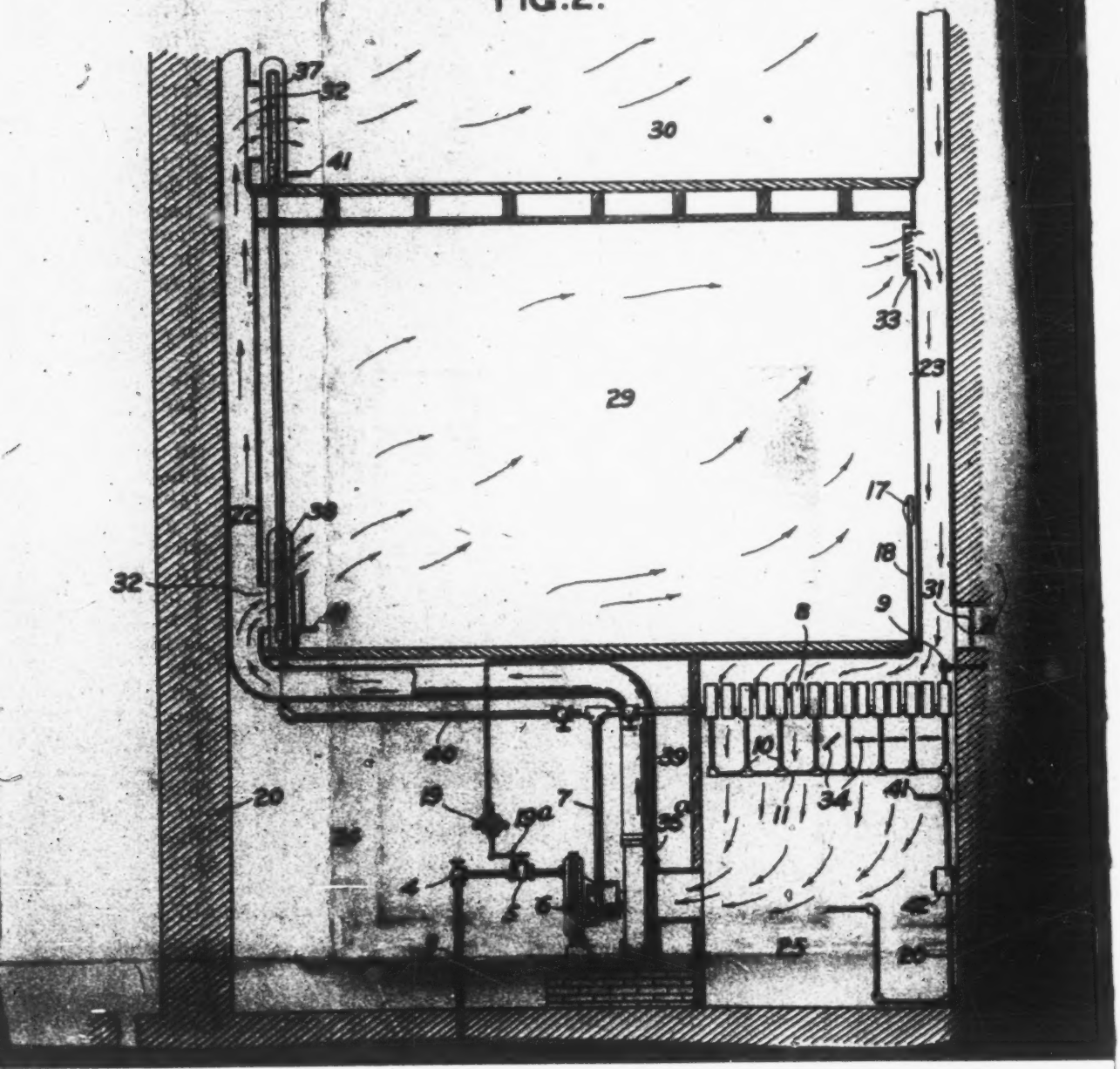
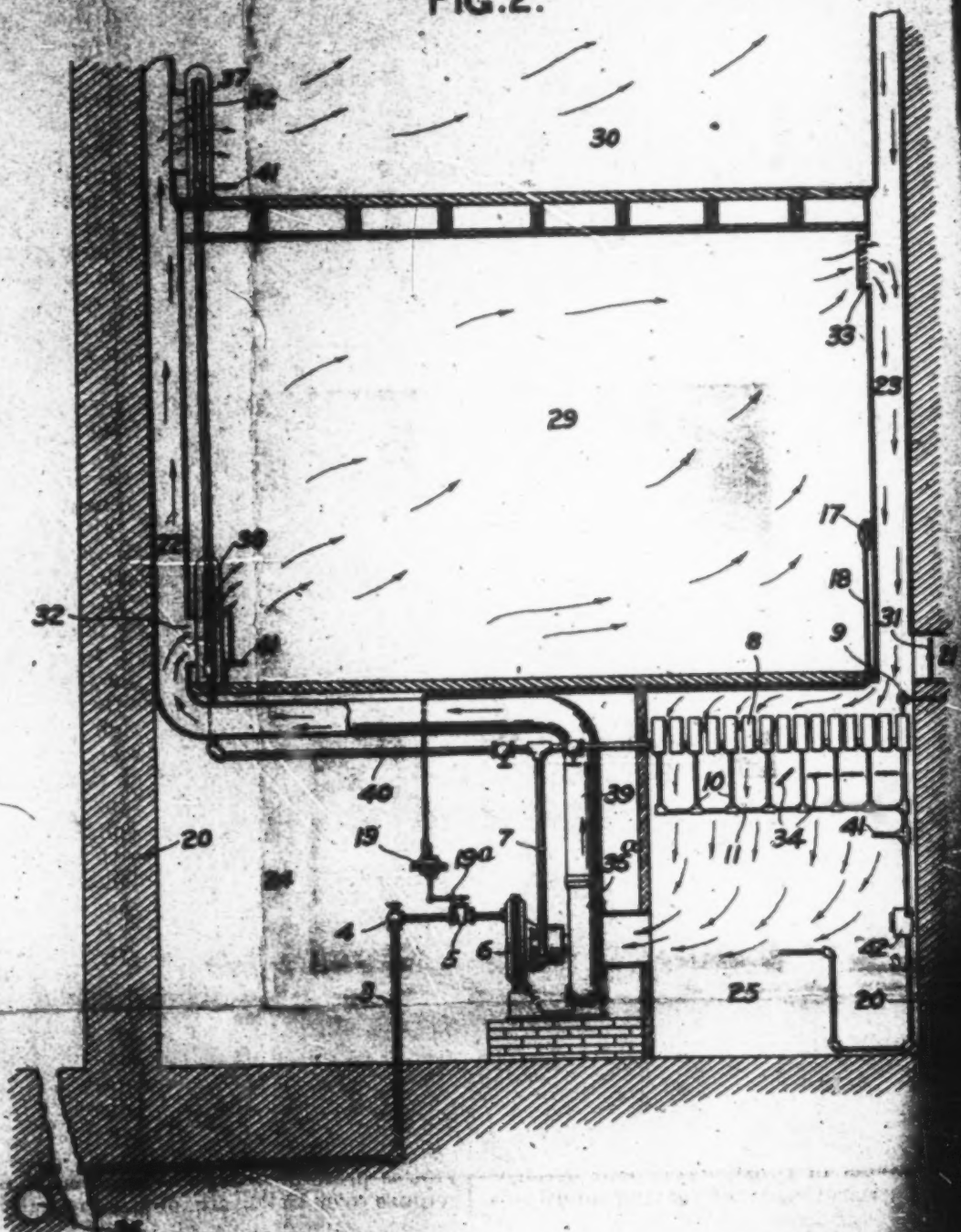


FIG. 2.



WITNESSES:
Emma W. Caulfield
William P. Bradley

INVENTOR
Cassius Carroll C

UNITED STATES PATENT OFFICE.

CASSIUS C. PECK, OF ROCHESTER, NEW YORK.

AUTOMATIC FAN SYSTEM OF HEATING.

No. 917,483. Specification of Letters Patent. Patented April 6, 1909.

Application filed March 3, 1908. Serial No. 418,[illegible].

To all whom it may concern:

Be it known that I, CASSIUS C. PECK, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Automatic Fan System of Heating, of which the following is a specification.

My invention relates to the class of heating apparatus in which a fan blower, or exhauster, is employed to circulate air in contact with heaters, and thence to the place of use.

Fan systems of heating by forced circulation of air are now extensively used for heating, and at the same time ventilating, public buildings, factories, drying rooms, etc., where an engineer is available for attending to the driving mechanism of the fan, the steam supply, and other operative details, but on account of requirement for an engineer such systems could not be used for ordinary residences and other similar situations.

The special object of my invention is to adapt a fan system to house heating, and this end is attained by first applying, in the form of steam, the heat required for warming purposes to driving the fan engine, and then using the exhaust of said engine for heating air supply of the fan, and returning water of condensation to the source of steam supply. Also in automatically supplying needful amount of steam and air, arranging the air heating surfaces so that practically all exhaust steam entering the air heater shall be condensed, and returning automatically resulting water of condensation to the source of steam supply, usually a steam [illegible] the several steps and details being [illegible] on the accompanying drawing and [illegible] in the following specification.

[illegible] drawings show in Figure 1 a vertical [illegible] of the mechanical elements [illegible] invention combined with a vertical [illegible] portion of a building main as shown at 36 in Fig. 2. The steam supply pipe 3, having stop valve 4, and automatically controlled throttling valve 5, derives the steam required for the heating system from typical engine 6, preferably of the turbine class, the exhaust from which passes through pipe 7 to indirect radiating sections 8, which are intended to represent any preferred type of air heating surface. It is essential, however, that in flowing through the heater the steam supply should follow a continuous course from the entrance end to the air discharge end, which has the check valve 9 usually discharging to atmosphere, the steam progressing in such way as to successively heat all the surfaces which it passes in regular succession from the entering point: In the heater as shown provision is made by branch pipes 10 connecting into the heater sections and into main drain pipe 11 for well draining the several sections, and for delivering water of condensation into return trap 12, having check valves 13 and 14, which symbolizes any form of return trap which provides for automatically returning the water through pipe 15 to boiler 1. Steam supply for equalizing pressure in the trap with that in the boiler, to allow water to flow by gravity from the former to the latter in accordance with the well known method, is provided through pipe 16. A thermostat 17, of any preferred design, is here shown as connected by tube 18 with a diaphragm 19, which actuates valve 5 through changes of atmospheric temperature in the room acting on the thermostat. Walls of the containing building are indicated by 20, the inlet passage for fresh air by 21, the hot air rising flue by 23, the fan-engine room by 35, and heating, or plenum, chamber by 25.

Steam turbine 6 is here shown as connected with the fan blower 35 by a belt 26 running over pulley 27 on the turbine and pulley 28 on the fan, but under suitable conditions the engine and fan may be direct connected

Application filed March 3, 1908. Serial No. 418,[illegible]

To all whom it may concern:

Be it known that I, CASSIUS C. PECK, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Automatic Fan System of Heating, of which the following is a specification.

My invention relates to the class of heating apparatus in which a fan blower, or exhauster, is employed to circulate air in contact with heaters, and thence to the place of use.

Fan systems of heating by forced circulation of air are now extensively used for heating, and at the same time ventilating, public buildings, factories, drying rooms, etc., where an engineer is available for attending to the driving mechanism of the fan, the steam supply, and other operative details, but on account of requirement for an engineer such systems could not be used for ordinary residences and other similar situations.

The special object of my invention is to adapt a fan system to house heating, and this end is attained by first applying, in the form of steam, the heat required for warming purposes to driving the fan engine, and then using the exhaust of said engine for heating air supply of the fan, and returning water of condensation to the source of steam supply. Also in automatically supplying needful amount of steam and air, arranging the air heating surfaces so that practically all exhaust steam entering the air heater shall be condensed, and returning automatically resulting water of condensation to the source of steam supply, usually a steam boiler; the several steps and details being shown on the accompanying drawing and described in the following specification.

The drawings show in Figure 1 a vertical front elevation of the mechanical elements of my invention combined with a vertical cross section of a portion of a building served thereby. Fig. 2 is a vertical elevation similar to Fig. 1, but showing certain modifications in construction and arrangement of apparatus to suit varying conditions.

Referring mostly to Fig. 1, the source of steam supply for heating will usually be a steam boiler, which is illustrated in the drawing by the numeral 1, having water line 2, except that in district systems of heating steam supply will be derived from a street main as shown at 36 in Fig. 2. The steam supply pipe 3, having stop valve 4, and automatically controlled throttling valve 5, derives the steam required for the heating system from typical engine 6, preferably of the turbine class, the exhaust from which passes through pipe 7 to indirect radiating sections 8, which are intended to represent any preferred type of air heating surface. It is essential, however, that in flowing through the heater the steam supply should follow a continuous course from the entrance end to the air discharge end, which has the check valve 9 usually discharging to atmosphere, the steam progressing in such way as to successively heat all the surfaces which it passes in regular succession from the entering point. In the heater as shown provision is made by branch pipes 10 connecting into the heater sections and into main drain pipe 11 for well draining the several sections, and for delivering water of condensation into return trap 12, having check valves 13 and 14, which symbolizes any form of return trap which provides for automatically returning the water through pipe 15 to boiler 1. Steam supply for equalizing pressure in the trap with that in the boiler, to allow water to flow by gravity from the former to the latter in accordance with the well known method, is provided through pipe 16. A thermostat 17, of any preferred design, is here shown as connected by tube 18 with a diaphragm 19, which actuates valve 5 through changes of atmospheric temperature in the room acting on the thermostat. Walls of the containing building are indicated by 20, the inlet passage for fresh air by 21, the hot air rising flue by 23, the fan-engine room by 35, and heating, or plenum, chamber by 25.

Steam turbine 6 is here shown as connected with the fan blower 35 by a belt 26 running over pulley 27 on the turbine and pulley 28 on the fan, but under suitable conditions the engine and fan may be direct-connected as shown in Fig. 2. Ordinary house heating boilers are available, as the fan-driven engine is preferably proportioned so as not to require over 15 lbs. steam pressure, and such boilers usually have steam pressure automatically controlled by a diaphragm acted on by said pressure, or by some equivalent mechanism for automatically operating the dampers and drafts according to steam requirements. As such provision for auto-

matically maintaining steam supply at the desired pressure to suit weather conditions is no part of my invention, it is not shown.

Operation of the system is as follows: Steam pressure from the source of steam supply being admitted to engine 6 by opening stop valve 4, the engine is thereby put in operation and drives fan 7, which circulates air in direction shown by arrows, that is first in contact with air heater 8, which is intended to be proportioned so as to suitably heat the air, flows through rising air flue 22, and registers 32 into and through rooms 29 and 30, from whence more or less of the air can be returned through registers 33 by flue 23 to the fan engine room 24 for recirculation. The proportion of fresh air used in the system is regulated by damper 31 in the fresh air inlet 21; and the supply of heated air to individual rooms may be controlled by said registers, which are provided with the usual shutter dampers. For regulating flow of air through heater 8 to suit varying conditions of weather, other dampers, 34 are provided to divert the current of air through such portion of the heater as is needful to condense the amount of steam which is being used. Water of condensation drains through pipes 10 into pipe 11, which is formed with a U trap to preserve a water seal between the several sections of the heater, and which conducts it to trap 12, which intermittently returns it to boiler 1. The office of thermostat 17 is to open and close the engine throttle valve 5 in accordance with heat requirements of the heating system by acting through diaphragm 19, lever 19a of which is attached to said valve. Thus when temperature of the room rises the thermostat is heated from the desired point, said thermostat acts to close throttle valve 5 in proportion to the amount of heat needed to maintain the desired temperature at the predetermined point. Fan 7 and fan engine 25 will operate at reduced current consuming but little power, pressure of steam entering engine and delivery of heat and air to the heater will therefore be

Heating surface in air heater 8 is intended to be proportioned so as to condense the steam admitted into said heater during maximum requirements for heat. At each of the heater opposite the admission end is provided with a vent pipe to atmosphere having an outwardly opening check valve 9, which can be loaded so as to carry any desired amount of back pressure on the engine to make up for small allowance of heating surface and maintain higher temperature in the heater to meet extreme requirements for heat. When starting the system, steam entering one end of the heater forces air in the heater before it to the opposite end where it finds egress under sufficient back pressure to open the check valve.

Because in case of turbine engines no oil mingles with exhaust steam, I much prefer to use this type of engine in some one of the forms in which it is, or may be, manufactured.

Special advantages of this system are that (a) it combines well controlled heating with any desired amount of ventilation; (b) that by proper arrangement of inlet and outlet registers, rooms can be evenly warmed from floor to ceiling, or more nearly so than in any system unprovided with mechanically forced circulation; (c) and that all heating apparatus can be avoided in occupied rooms.

The fan engine is preferably proportioned to commence running on very low steam pressures, say two or three pounds, which also provides for increasing speed as steam pressure is increased. Thus if steam pressure completely fails during the night, causing the engine and fan to stop, they will start automatically when light steam pressure has again been established; and the pressure to be maintained during hours of use will be determined by weather conditions, or other conditions governing requirement for heat; that is steam pressure will be increased in proportion as requirement for heat increases. Fan speed, consequent volume of air circulated, dependent on volume and pressure of [illegible] the fan engine there will also

I do not confine myself to the exact structure and arrangement of apparatus

supply being admitted to engine 6 by opening stop valve 4, the engine is thereby put in operation and drives fan [illegible] which circulates air in direction shown [illegible] arrows, that is first in contact with air heater 8, which is intended to be proportioned so as to suitably heat the air, then through rising air flue 22, and registers 32 into and through rooms 29 and 30, from whence more or less of the air can be returned through registers 33 by flue 23 to the fan engine room 24 for recirculation. The proportion of fresh air used in the system is regulated by damper 31 in the fresh air inlet 21; and the supply of heated air to individual rooms can be controlled by said registers, which are provided with the usual shutter dampers. For regulating flow of air through heater 8 to suit varying conditions of weather, gates, or dampers, 34 are provided to direct the current of air through such portion of the heater as is needful to condense the amount of steam which is being used. Water of condensation drains through pipes 10 into pipe 11, which is formed with a U trap to preserve a water seal between the several sections of the heater, and which conducts it to trap 12, which intermittently returns it to boiler 1. The office of thermostat 17 is to open and close the engine throttle valve 5 in accordance with heat requirements of the heating system by acting through diaphragm 19, [illegible] lever 19ª of which is attached to said valve. Thus when temperature of the room where the thermostat is located falls below the desired point, said thermostat acts to open throttle valve 5 in proportion to the amount of heat needed to maintain the room temperature at the predetermined point. Engine 22 and fan 35 will consequently be run at speed corresponding to the volume and pressure of steam entering the engine, and delivery of heat and air to apartments will therefore be in corresponding proportion, thus maintaining temperature of air [illegible] uniform [illegible] the fan engine [illegible] the double office of circulating air which conveys heat to the point where required, and of a reducing pressure valve for changing relatively high steam pressure to the lower pressures usually employed in heating systems.

While thermostatic control of the engine throttle is not indispensable, as the heating system can be operated by hand control of said throttle, or by dispensing with the said throttle and regulating by stop valve 4, it constitutes a desirable means of rendering the system automatic in operation to maintain heating effect uniform.

is provided with a vent pipe to atmosphere having an outwardly opening check valve 9, which can be loaded so as to carry any desired amount of back pressure on the engine to make up for small allowance of heating surface and maintain higher temperature in the heater to meet extreme requirements for heat. When starting the system, steam entering one end of the heater forces air in the heater before it to the opposite end where it finds egress under sufficient back pressure to open the check valve.

Because in case of turbine engines no oil mingles with exhaust steam, I much prefer to use this type of engine in some one of the forms in which it is, or may be, manufactured.

Special advantages of this system are that (*a*) it combines well controlled heating with any desired amount of ventilation; (*b*) that by proper arrangement of inlet and outlet registers, rooms can be evenly warmed from floor to ceiling, or more nearly so than in any system unprovided with mechanically forced circulation; (*c*) and that all heating apparatus can be avoided in occupied rooms.

The fan engine is preferably proportioned to commence running on very low steam pressures, say two or three pounds, which also provides for increasing speed as steam pressure is increased. Thus if steam pressure completely fails during the night, causing the engine and fan to stop, they will start automatically when light steam pressure has again been established; and the pressure to be maintained during hours of use will be determined by weather conditions, or other conditions governing requirement for heat; that is steam pressure will be increased in proportion as requirement for heat increases. Fan speed, and consequent volume of air circulated, being dependent on volume and pressure of steam entering the fan engine, there will always be a correct and corresponding balance between air and heat capacity applicable to the heating system.

I do not confine myself to the exact construction and arrangement of apparatus shown and described, as the essential features of the invention can be embodied in many different ways, and indeed require various modifications to suit varying local conditions of use. Thus in Fig. 2, an exhausting fan 35ª is substituted for the forcing fan shown in Fig. 1, 35ª being arranged for drawing air by induction through the air heater 8 and then forcing it to the point of use; and air heaters 37 and 38 are located at the points where air is to be used for heating,

37 being of the direct type, and 38 of the direct-indirect type of heater, air being delivered from the fan 35ª through pipe 39 to the heaters, and exhaust steam from fan engine 6 being similarly conducted through pipe 40 to said heaters, the water of condensation therefrom returning through pipe 41 to meter 42, whence it goes to any place for use, or to waste.

What I claim and desire to secure by Letters Patent is:—

1. In a fan system of heating, the method of governing heat supply and delivery for the system by first using the steam required for supply of heat to the heating system to drive air-moving mechanism; condensing the exhaust steam from said mechanism in air heaters; moving air by said mechanism over the air heaters and delivering it to the space to be heated; and governing air and heat supply for the system by the speed at which the air-moving mechanism is made to run, substantially as set forth.

2. In a fan system of heating, the method of first using the amount of steam required for heating to drive the fan engine and connected fan by connecting the engine with a source of steam for driving it; delivering the engine exhaust into air heaters; connecting the fan with said heaters and delivering heated air forced by the fan to the place of use; governing speed of the combined engine and fan so as to supply the amount of heat and air required in the heating system; and automatically regulating said speed by thermostatic control.

3. In a fan system of heating, the method of first using the amount of steam required for supplying heat for the heating system to drive the fan engine with the attached fan by connecting the engine with a steam supply; using the exhaust steam from the engine in air heaters; delivering air from the fan to said heaters and to the place of use; automatically draining water of condensation from said air heaters and discharging it into the source of steam supply to the engine; and governing speed of the combined engine and fan to supply heat and air as required by the heating system.

4. The method of operating automatically a fan system of heating, consisting in connecting a fan engine, having an attached fan, to a source of steam supply; using the engine as a reducing valve to deliver into air heaters the reduced pressure steam needed to furnish the amount of heat required by the heating system; delivering air from the fan to said heaters and to the place of use; venting said heaters to atmosphere and automatically closing the vents against entrance of air; automatically draining water of condensation from said air heaters back into the source of steam supply to the fan engine; condensing in the heating system the pressure steam required in operating the drainage mechanism; and governing thermostatically the speed of the combined engine and fan to automatically supply the amount of heat and air required for the heating system.

5. In a fan system of heating, the method of using the fan engine as a reducing valve for reducing pressure of steam required to drive the fan engine by discharging the exhaust steam into air heaters; venting said heaters to atmosphere at the end opposite the steam inlet; condensing the steam in said heaters by guiding it in a continuously progressive course through successive portions constituting one or more passages of sufficient length to condense the steam before reaching the vented end; delivering air from the fan to said heaters and to the place of use; automatically draining water of condensation from said heaters; and governing speed of the combined engine and fan so as to supply heat and air in amount required by the heating system.

CASSIUS C. PECK.

Witnesses:
CHARLES L. WHITMORE,
JNO. H. MCANARNEY.

1022

T. B. FREAS.

HEATING SYSTEM FOR CONSTANT TEMPERATURE BATHS.

APPLICATION FILED MAR. 17, 1913.

1,165,958.

Patented Dec. 28, 1915.

4 SHEETS—SHEET 1.

Fig. 2

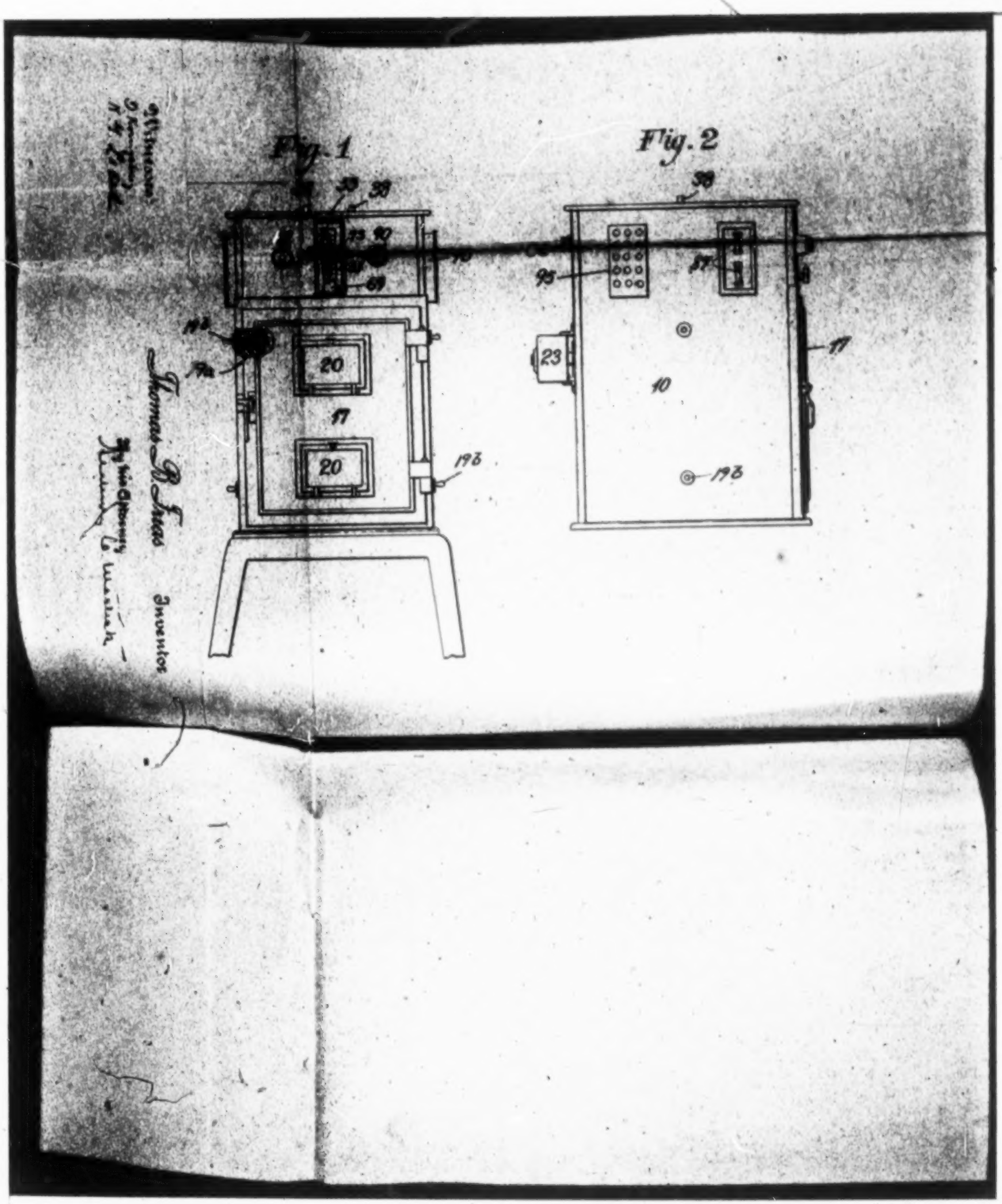


Fig. 1
Fig. 2
38
95
57
23
10
17
20
19b
Thomas B. Treas
Inventor

1033

T. B. FREAS.

HEATING SYSTEM FOR CONSTANT TEMPERATURE BATHS.

APPLICATION FILED MAR. 17, 1913.

1,166,958.

Patented Dec. 28, 1913.

4 SHEETS—SHEET 2.

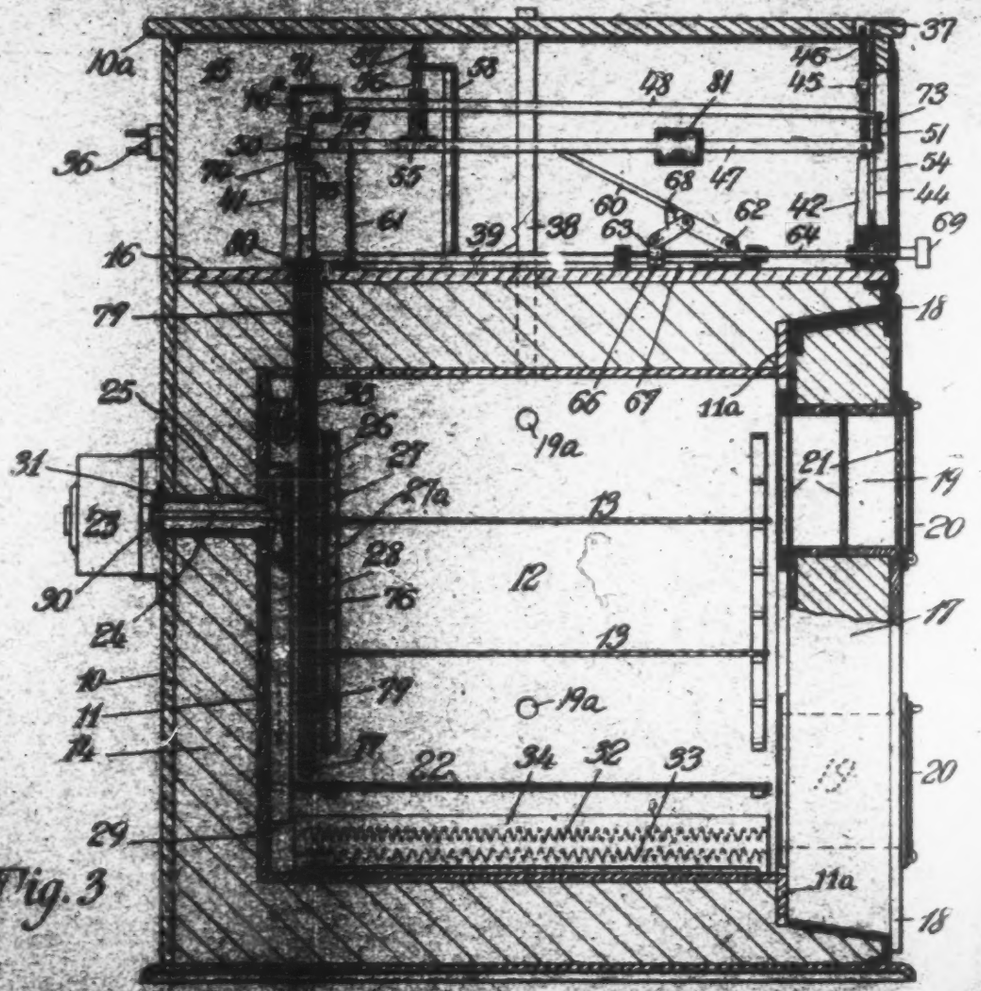


Fig. 3

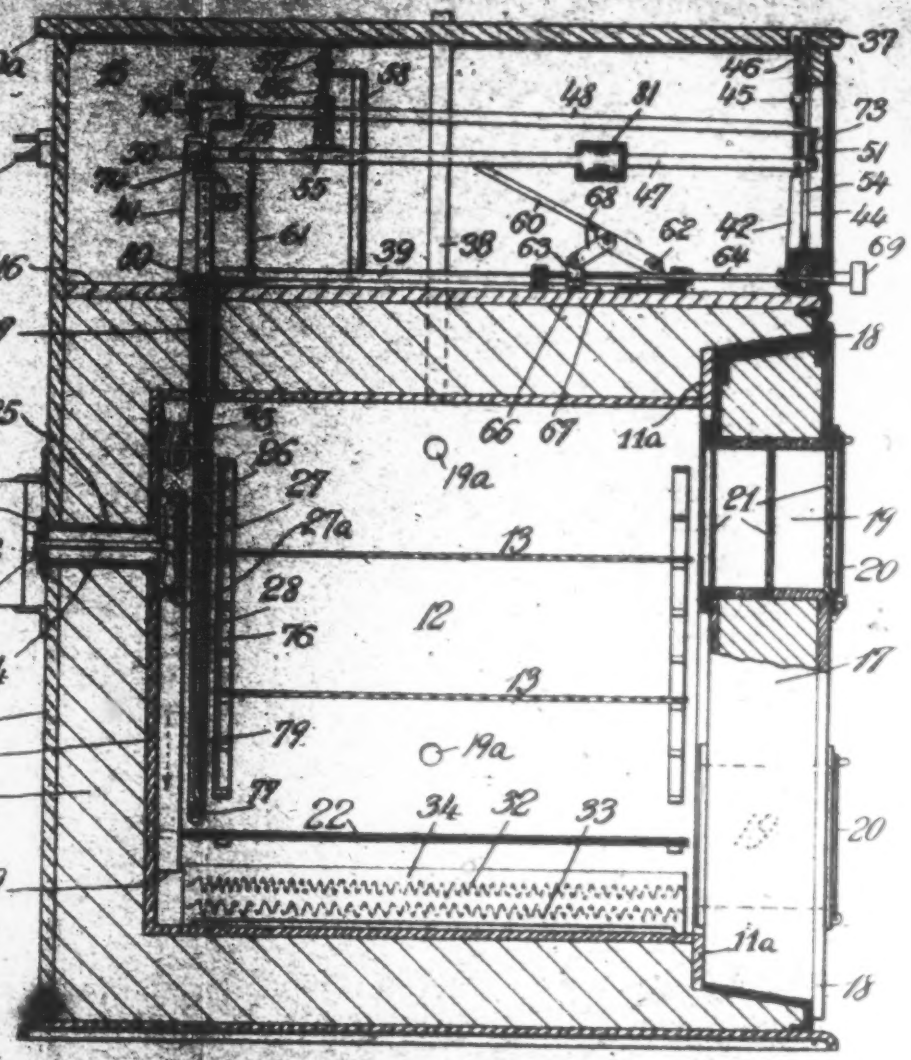


Fig. 3

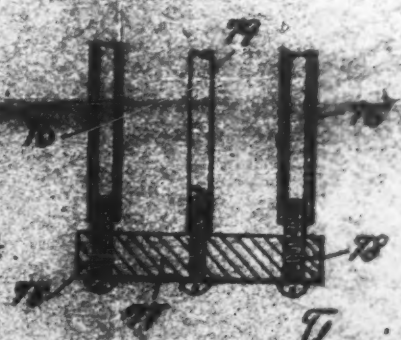


Fig. 4

Witnesses:
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Thomas B. Freas Inventor
By his Attorney
Sandoval C. Mastick

1024

T. B. FREAS.

HEATING SYSTEM FOR CONSTANT TEMPERATURE BATHS.

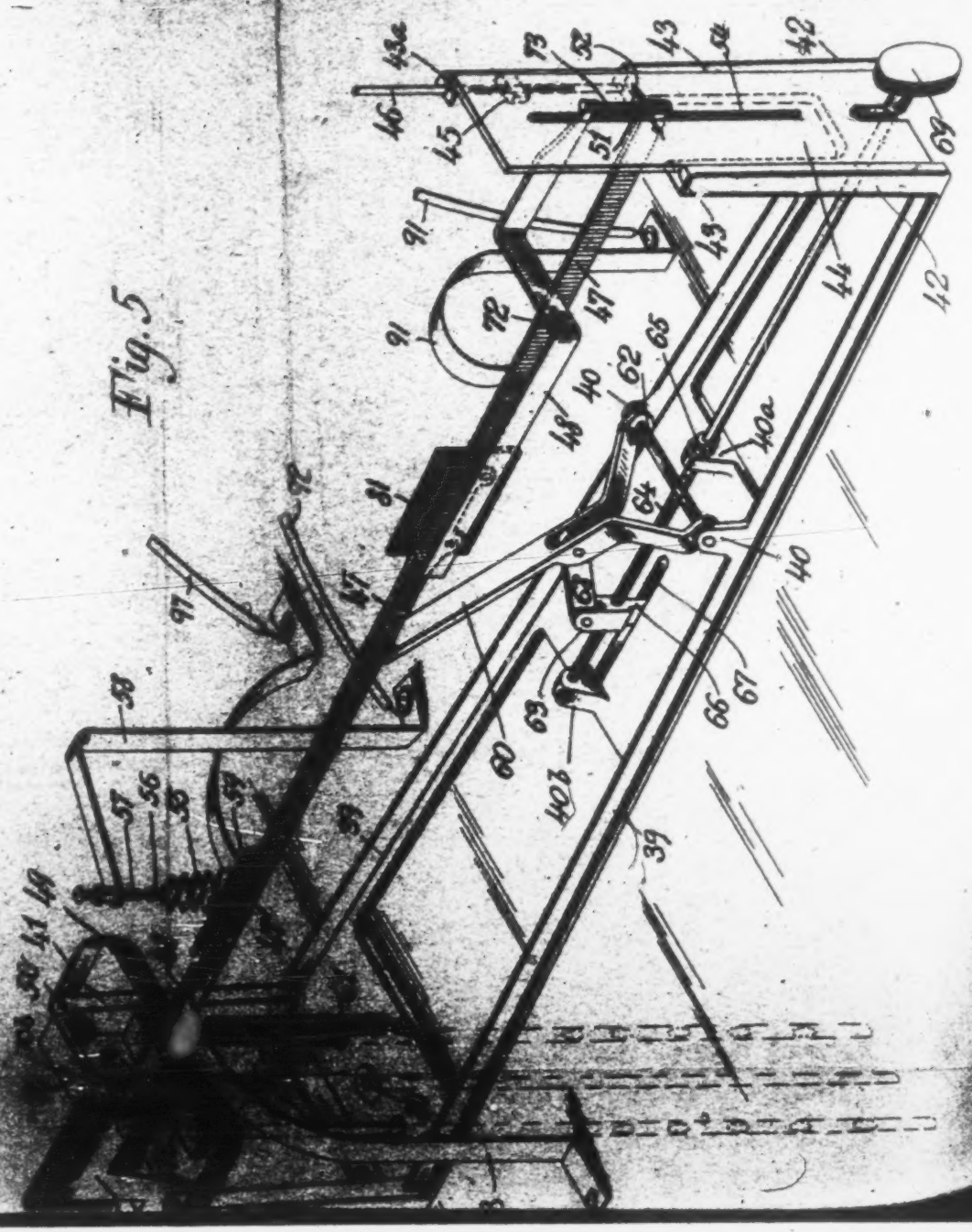
APPLICATION FILED MAR. 17, 1913.

1,165,958.

Patented Dec. 28, 1915.

4 SHEETS—SHEET 3.

Fig. 5



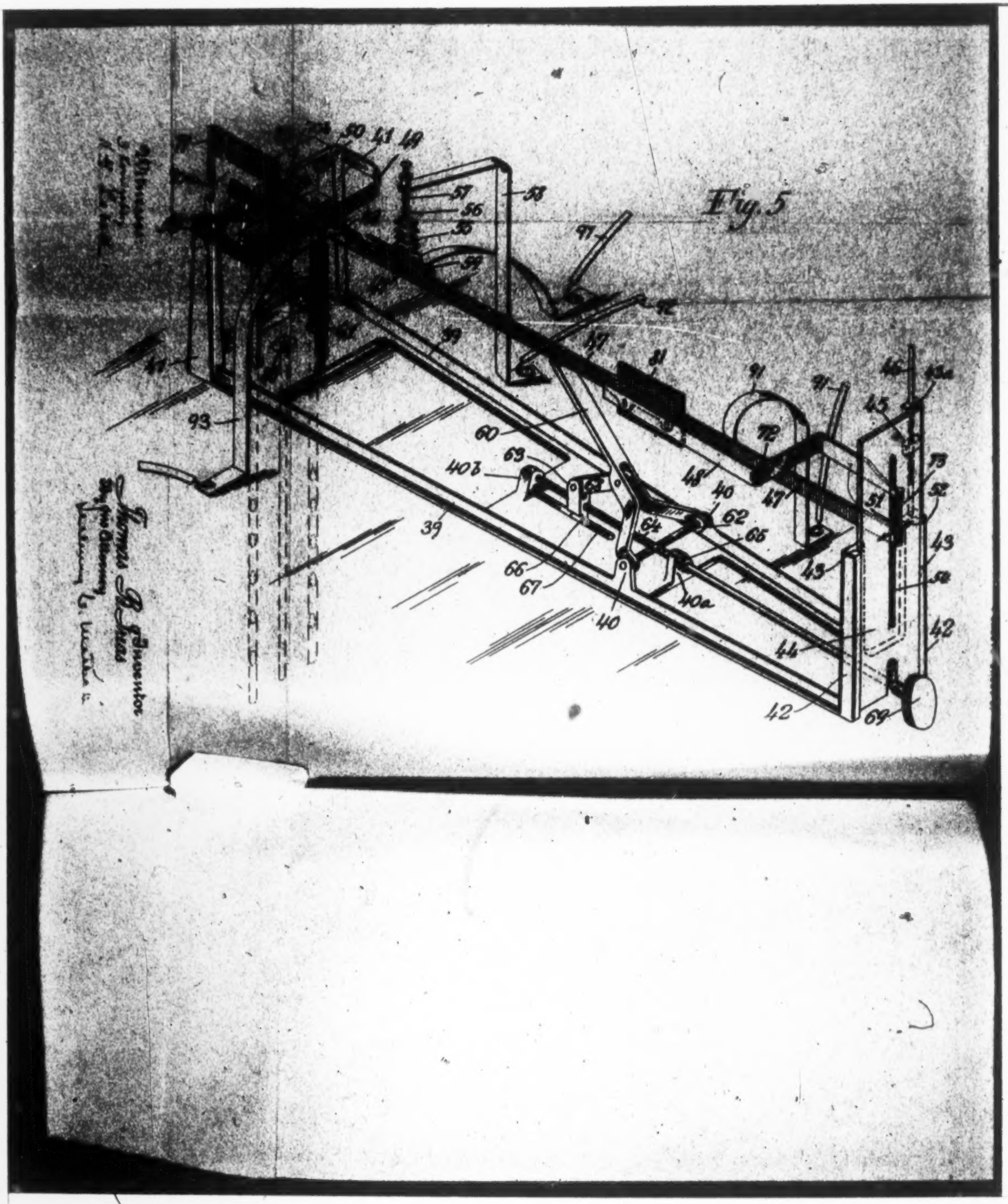


Fig. 5
Thomas B. Treas
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1025

T. S. FREAS.

HEATING SYSTEM FOR CONSTANT TEMPERATURE BATHS.

APPLICATION FILED MAR. 17, 1913.

1,165,958.

Patented Dec. 28, 1915.

4 SHEETS—SHEET 4.

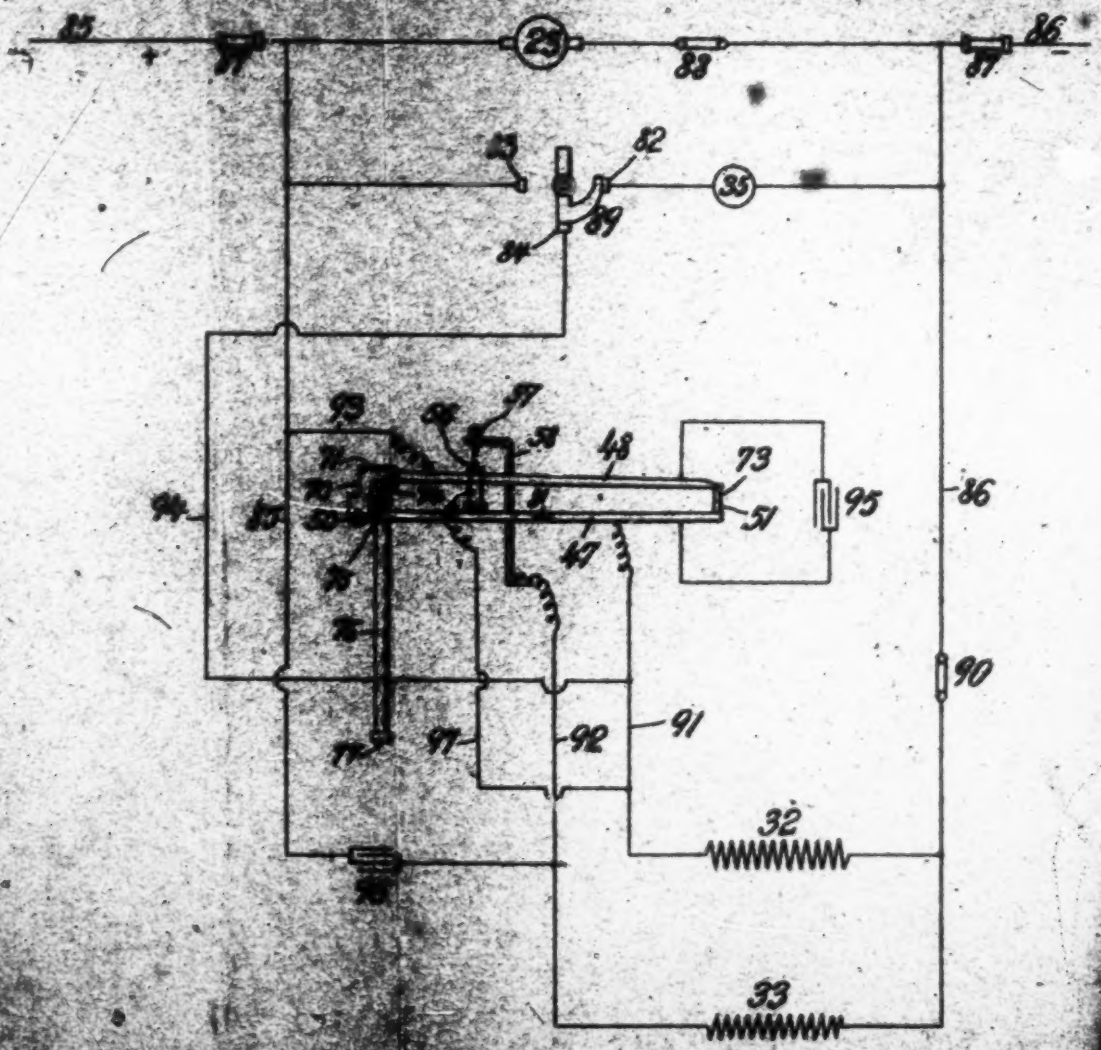

Fig. 6

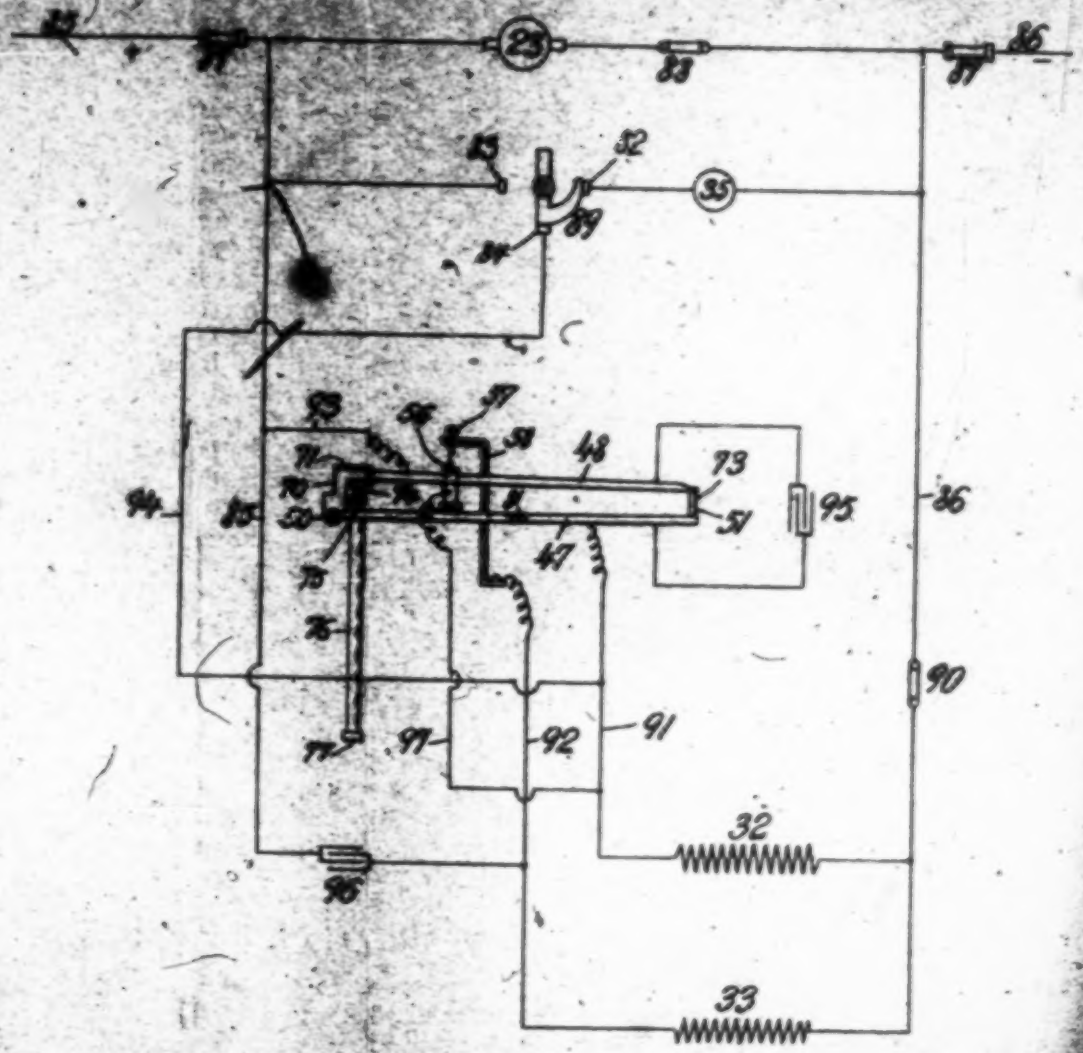

Fig. 6

Witnesses:
J. Kornigsberg
H. G. Lo[illegible]

Thomas B. Fries Inventor
[illegible] Attorney
[illegible]

UNITED STATES PATENT OFFICE.

THOMAS B. FREAS, OF NEW YORK, N. Y., ASSIGNOR TO V. MUELLER & COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

HEATING SYSTEM FOR CONSTANT-TEMPERATURE BATHS.

1,165,958. Specification of Letters Patent. Patented Dec. 28, 1915.

Application filed March 17, 1913. Serial No. 754,717.

To all whom it may concern:

Be it known that I, THOMAS B. FREAS, a citizen of the United States of America, and a resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Heating Systems for Constant-Temperature Baths, of which the following is a specification.

This invention relates to heating systems for constant-temperature baths of the type designed for use as chemical laboratory ovens, bacteriological incubators and other similar or analogous apparatus where such device finds application and the object of the invention is to provide means for maintaining the temperature accurately at any desired degree of heat irrespective of the changes of room temperature.

This invention is furthermore designed as an improvement upon the type of apparatus heretofore patented by me in U. S. Letters Patent No. 1,024,565, dated April 30, 1912.

In the following I have described, in connection with the accompanying drawings, a structure illustrating the application of the principles of my invention, the features thereof being more particularly pointed out hereinafter in the claims.

In the drawings Figure 1 is a front elevation of one form of constant-temperature bath illustrating the practice of the principles of my invention. Fig. 2 is a side elevation of the structure shown in Fig. 1, the support being omitted. Fig. 3 is a central vertical sectional view of the same, certain parts being shown in elevation. Fig. 4 is a detail view of the lower part of the thermostatic control. Fig. 5 is an isometric perspective view, on a somewhat enlarged scale, of the automatic switch mechanism and control devices in connection therewith and Fig. 6 is a diagrammatic view of the electri[illegible]iring system.

acid proof, fireproof and heat and electrically insulating character such as that which is known in the trade as asbestos wood or "transite." The space between the walls of the boxes is preferably filled with a suitable heat insulating material 14, such as cellular asbestos. The walls of the outer box are shown as extended upwardly to form, in connection with the top 10ª and the floor 16, a chamber 15 for the reception of the automatic switch mechanism and associated parts hereinafter described. The top 10ª and floor 16 are preferably of the same material as the walls.

17 is a door in the front of the casing, preferably having inwardly tapered edges adapted to form a tight joint with correspondingly tapered edges in the door frame. The edges of the door 17 and the door frame are each preferably made of metal cast in integral pieces respectively, each thus forming a unitary structure. The outer edges of the door are provided with a peripheral flange 18 to assist in preventing heat leaks.

19, 19 are observation openings closed by shutters 20, 20. The openings 19, are provided with windows 21, of any suitable transparent material not affected by the heat, such as a well annealed glass or mica.

19ª, 19ª are ventilation openings through the side walls of the casing, closed by spring plugs 19ᵇ, 19ᵇ.

The front and rear walls of the door are preferably of nonheat conducting material, such as asbestos wood, as is also the frames of the observation openings 19, so that the door presents no heat conducting surface adjacent the chamber 12 and the metal parts of the door and door frame are substantially insulated from [illegible]. It will be observed that the inner box 11 is provided with flanges 11ª which abut the inner metallic edges of the door and door frame and extend some distance beyond said edges thus

To all whom it may concern:

Be it known that I, THOMAS B. FRAAS, a citizen of the United States of America, and a resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Heating Systems for Constant-Temperature Baths, of which the following is a specification.

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Similar numerals of reference indicate similar parts throughout the several views.

In the form selected to illustrate the invention, as shown in the drawings, the casing comprises an outer box 10 and an inner box 11, the latter forming a receiving chamber 12 wherein the objects to be acted upon are to be placed. Adjustable shelves 13, 13 are provided to divide the space in chamber 12 as desired. The material employed for the walls of the boxes should preferably be of an asbestos wood, fireproof and heat and electrically insulating material such as that which is known in the trade as asbestos wood or "transite." The space between the walls of the boxes is preferably filled with a suitable heat insulating material, such as cellular asbestos. The walls of the outer box are shown as extended upwardly to form, in connection with the top 10[a] and the floor 14, a chamber 15 for the reception of the automatic switch mechanism and associated parts hereinafter described. The top 10[a] and floor 14 are preferably of the same material as the walls.

17 is a door in the front of the casing, preferably having inwardly tapered edges adapted to form a tight joint with correspondingly tapered edges in the door frame. The edges of the door 17 and the door frame are each preferably made of metal cast in integral pieces respectively, each thus forming a unitary structure. The outer edges of the door are provided with a peripheral flange 18 to assist in preventing heat leaks.

19, 19 are observation openings closed by shutters 20, 20. The openings 19, are provided with windows 21, of any suitable transparent material not affected by the heat, such as a well annealed glass or mica.

19[a], 19[a] are ventilation openings through the side walls of the casing, closed by spring plugs 19[b], 19[b].

The front and rear walls of the door are preferably of nonheat conducting material, such as asbestos wood, as is also the frames of the observation openings 19, so that the door presents no heat conducting surface adjacent the chamber 12 and the metal parts of the door and door frame are substantially insulated from said chamber. It will be observed that the inner box 11 is provided with flanges 11[a] which abut the inner metallic edges of the door and door frame and extend some distance beyond said edges thus permitting no metal heat conducting part to come into proximity to the chamber 12. The space between the front and rear walls of the door is preferably filled with a nonheat conducting material such as cellular asbestos.

22 is a shelf of insulating material, the function of which will be explained hereinafter.

23 is a motor suitably supported on the rear outer wall of the casing, its armature

shaft 24 extending horizontally to the inside of the casing through a [illegible] sleeve 25. A centrifugal blower [illegible] is secured to the inner end of armature shaft 24 and is adapted to draw the air [illegible] chamber 12 through the opening [illegible] lower housing 27ª and to force it through a downward extension 28 of the blower housing and out at 29 into the lower part of the chamber 12 below the shelf 22 and through and over the heating elements 23 and 23ª which latter may be of any suitable form, as shown, 23 is the primary heating element and 23ª is the secondary heating element, each comprising a coil of wire of suitable resistance supported on a frame of [illegible] preferably of asbestos wood, in such manner as to permit free circulation of air around the same. At the outer end of sleeve 25 there is a disk provided with apertures 30 which may be opened or closed by turning a similarly apertured disk or cover 31 so as to establish communication between the outer air and the chamber 12 at the will of the operator in order that he may draw, by means of the blower 26, any desired quantity of fresh air into said chamber.

In the absence of the forced circulation of air the upper part of chamber 12 tends, through convection air currents, to become overheated and in the absence of insulating shelf 22, the lower part of chamber 12 tends, through the radiation of heat from the heating elements, to become overheated. The purpose of this forced circulation of air therefore within the chamber, is to provide a uniform distribution of the heated air within said chamber. The function of insulating shelf 22 is to prevent the heat radiating from the elements 23 and 23ª from disturbing this uniformity of heat produced by the forced circulation.

[illegible] chamber 12.

[illegible] for connecting the

[illegible] for the

[illegible] may

[illegible] reference

to cause lug or block 45 and its attach[illegible] scale face 44, to travel vertically. 48ª [illegible] a support mounted on standard 42 to for[illegible] a guide for the upper end of rod 46. Th[illegible] rear standards 41, 41, support the bearin[illegible] for the controlling levers 47 and 48. Th[illegible] lever 48 is shown as broken in Fig. 5 for t[illegible] sake of clearness. 49 is a yoke carryi[illegible] lever 47 and is pivoted at 50 in standards 4[illegible] The free end of lever 47 projects throu[illegible] slot 54 in scale face 44 and carries a co[illegible] tactor point 51 and a pointer 52 adapted [illegible] indicate on the temperature scale 53 o[illegible] scale face 44. (See Fig. 1). The division[illegible] of scale 53 may represent an arbitrary cali[illegible] bration or may represent a standard cali[illegible] bration in degrees of temperature. 55 is [illegible] flexible conductor mounted on lever 47 and[illegible] provided with a contactor 56 adapted to[illegible] contact with an adjustable contactor 57 on[illegible] conducting standard 58, suitable electrical[illegible] insulation 59 being interposed between conductor 55 and lever 47. Lever 47 rests upon a lifting arm 60 and is kept down taut on said arm by spring 61. Lifting arm 60 is pivoted on rod 62 supported in lugs 40 on the bed plate. 63 is a female threaded block engaging male threaded rod 64 mounted to rotate in bearings 40ª and 40ᵇ on bed plate 39 and secured against longitudinal movement by means of a collar 65. Block 63 carries a depending finger 66 which travels in a slot 67 in the bed plate 39 to prevent the block 63 from turning. A link 68 connects the block 63 and the lifting arm 60 as shown. The free end of the rod 64 projects through the front wall of the casing and through the scale face 44 as shown and is provided with an operating knob 69 so that the rod 64 may be rotated from without by the operator. Lever 48 is secured at one [illegible] to an arm 70ª on a rocker plate 70 but [illegible] insulated therefrom by means of suitable [illegible] lation 71. Rocker arm 70 is pivoted at [illegible] 50 to standards 41, 41. At 72 lever [illegible] offset so that the free end of the lever [illegible] extend through slot 54 in scale face 44 [illegible] the free end of lever 48 [illegible] a contactor 73 adapted to contact [illegible] tactor 51 on lever 47. Rocker pla[illegible] provided with an offset lug 70ᵇ [illegible] concave shaped bearing (not [illegible]

below the shelf [illegible] over the heating [illegible] which latter may be of any [illegible] shown, 33 is the primary [illegible] and 33 is the secondary heating [illegible] each comprising a coil of wire [illegible] supported on a frame [illegible] of asbestos wood, in such manner as to permit free circulation of air around the same. At the outer end of chamber 19 there is a disk provided with apertures 30 which may be opened or closed by turning a similarly apertured disk or cover 31 so as to establish communication between the outer air and the chamber 19 at the will of the operator in order that he may draw, by means of the blower 26, any desired quantity of fresh air into said chamber.

In the absence of the forced circulation of air the upper part of chamber 12 tends, through convection air currents, to become overheated and in the absence of insulating shelf 22, the lower part of chamber 12 tends, through the radiation of heat from the heating elements, to become overheated. The purpose of this forced circulation of air therefore within the chamber, is to provide a uniform distribution of the heated air within said chamber. The function of insulating shelf 22 is to prevent the heat radiating from the elements 32 and 33 from disturbing this uniformity of heat produced by the forced circulation.

35 is a lamp supported within chamber 12.

36 is an attachment cap for connecting the electric mains.

37 is an opening through cover 10ª for the purpose hereinafter described.

38, 38 are ventilating tubes leading from the chamber 19 through cover 10ª to the exterior and through which thermometers may be suspended.

Referring now to Figs. 3 and 5, reference numeral 39 indicates a bed plate secured to floor 16 and carrying bearings 40, 40, bearings 40ª, 40ª and standards 41, 41 and 42, 42 preferably cast therewith. Standards 42, 42 are provided with ways 43 for guiding the vertically adjustable scale face 44. Scale face 44 carries [illegible] by screw threaded lug or block [illegible] through which passes a threaded rod [illegible] mounted against vertical [illegible] standard 42. The top of rod 45 is provided with a slot so that, by means of a [illegible] inserted through opening 31, the rod may be rotated

lever 47 and is pivoted [illegible] The free end of lever 47 projects through slot 54 in scale face 44 and carries a contactor point 51 and a pointer 52 adapted to indicate on the temperature scale 53 on scale face 44. (See Fig. 1). The division of scale 53 may represent an arbitrary calibration or may represent a standard calibration in degrees of temperature. 55 is a flexible conductor mounted on lever 47 and provided with a contactor 56 adapted to contact with an adjustable contactor 57 on conducting standard 58, suitable electrical insulation 59 being interposed between conductor 55 and lever 47. Lever 47 rests upon a lifting arm 60 and is kept down taut on said arm by spring 61. Lifting arm 60 is pivoted on rod 62 supported in lugs 40 on the bed plate. 63 is a female threaded block engaging male threaded rod 64 mounted to rotate in bearings 40ª and 40ª on bed plate 39 and secured against longitudinal movement by means of a collar 65. Block 63 carries a depending finger 66 which travels in a slot 67 in the bed plate 39 to prevent the block 63 from turning. A link 68 connects the block 63 and the lifting arm 60 as shown. The free end of the rod 64 projects through the front wall of the casing and through the scale face 44 as shown and is provided with an operating knob 69 so that the rod 64 may be rotated from without by the operator. Lever 48 is secured at one end to an arm 70ª on a rocker plate 70 but is insulated therefrom by means of suitable insulation 71. Rocker arm 70 is pivoted at 50 to standards 41, 41. At 72 lever 48 is offset so that the free end of the lever will extend through slot 54 in scale face 44 above the free end of lever 47. Lever 48 carries a contactor 73 adapted to contact with contactor 51 on lever 47. Rocker plate 70 is provided with an offset lug 70ª having a concave shaped bearing (not shown) on its under side adapted to engage the upper end of a pin 74 rigidly carried by lug 75. The lug 70ª is offset with respect to the center of rotation of lever 48 about pivot 50, so that any vertical movement of pin 74 will cause lever 48 to rock and cause contactor 73 to move vertically a distance which distance compared with the vertical movement of pin 74, is according to the ratio of the distances of contactor 73 and pin 74 from the center of rotation 50. The position of bar 75 is so adjusted, by the means hereinafter described, that pin 74 will engage

concave shaped bearing in lug 70ᵃ when the temperature of thermostatic tubes 76 corresponds to the temperature at which the device has been set as indicated by the pointers [illegible] on scale 53. The thermostatic device comprises in part the thermostatic tubes 76, 76, made of a material adapted to expand and contract in response to variations in temperature, preferably of thin brass and perforated. The tubes 76 are preferably perforated to provide for a freer circulation of air in order to cause a quicker response to changes in temperature. The material of which tubes 76 are made is such that the highest coefficient of expansion may be obtained consistent with strength and permanency of form under varying conditions of temperature. Brass has been found to give good results. The upper ends of tubes 76 are rigidly fastened to bar 75 and the lower ends of tubes 76 are connected with bar 77 by means of adjusting screws 78, 78. By means of these adjusting screws 78, 78, bar 75 carried by tubes 76, 76 may be vertically adjusted and thereby through pin 74, lug 70ᵃ and lever arm 48, adjust contactor 73 so that it may come within range of scale 53, the finer adjustment being made by the vertical movement of the scale face 44 as hereinbefore described. 79 indicates a rod made of material whose coefficient of expansion is practically *nil*. I have found invar ([illegible] of 36% nickel, 74% steel) to be a satisfactory material for the purpose. Rod 79 at its lower end is attached to bar 77 and at its upper end is rigidly attached to the [illegible] 39 at 80. As shown the connection of rod 79 to bar 77 is adjustable for the same reason heretofore given in connection with adjustable screws 78, 78.

The electrical connections are shown diagrammatically in Fig. 6. 85 and 86 indicate [illegible] preferably provided with [illegible] 28 is connected across [illegible] controlled by a switch 88. [illegible] across the mains and [illegible] switch 89 so that [illegible] on the one [illegible] 82, directly [illegible] hand, may [illegible] through con- [illegible] contactor 91, con-

fore described in connection with primary heating element 32. Contactors 51 and 73 are protected, on breaking the circuit, by condenser 95 and contactors 56 and 57 are are similarly protected by condenser 96. When contactors 56 and 57 are closed, and the additional load of heating element 33 is on contactors 51 and 73, these latter contactors, on the breaking of the circuit, are protected by condenser 96 in addition to condenser 95.

In the operation of the apparatus described, the operator after closing switch 90, by means of operating knob 69 sets the pointers 52 at the desired temperature as indicated on the scale 53. Assuming that all parts are properly adjusted, if the temperature in the receiving chamber 12, and thus the temperature of the thermostatic tubes 76, 76, is below that of the indicated setting, contactor 73 will rest on contactor 51, thereby completing the electrical connection through primary heating element 32. The heat given off from element 32 circulating through chamber 12, freely by convection currents or forcibly by the forced draft of the blower 26, will raise the temperature of the thermostatic tubes 76, 76, which tubes will expand and, because of the non-expansion of rod 79, will cause bar 75 to rise and hence raise lever arm 48 and, on sufficient expansion of thermostatic tubes 76, 76, will break the current through contactors 73 and 51 and thus cut out heating element 32. Then, on the loss of a small quantity of the heat in chamber 12, the temperature of the thermostatic tubes 76, 76, will be lowered and a movement of a lever 48 opposite to that last described above will occur and the contactor 73 will again rest on contactor 51, thus throwing heating element 32 in again. Thus it will be seen that the heat of the chamber 12, which is continuously being lost by conduction through the walls, even though these latter be of the best possible insulation, will be intermittently replaced by means of heating [illegible] hereinbefore described. The capacity of heating element 32, for the more or less low temperatures, should be as low as possible consistent with the amount of heat required, because, for accurate regulation, the quan-

...ted to provide for a freer circulation ... order to cause a quicker response ... in temperature. The material of ... tubes 76 are made is such that the ... coefficient of expansion may be ob... consistent with strength and per... of form under varying conditions ... perature. Brass has been found to ... good results. The upper ends of tubes ... rigidly fastened to bar 75 and the ... ends of tubes 76 are connected with ... by means of adjusting screws 78, 78. ... means of these adjusting screws 78, 78, ... carried by tubes 76, 76 may be verti... adjusted and thereby through pin 74, ... and lever arm 48, adjust contactor ... that it may come within range of scale ... finer adjustment being made by the ... movement of the scale face 44 as ... before described. 79 indicates a rod ... material whose coefficient of expan... practically nil. I have found invar ... of 36% nickel, 74% steel) to be a ... material for the purpose. Rod ... lower end is attached to bar 77 and ... upper end is rigidly attached to the ... 29 at 80. As shown the connec... rod 79 to bar 77 is adjustable for the ... purpose heretofore given in connection ... adjustable screws 78, 78.

... electrical connections are shown dia... ...ically in Fig. 6. 85 and 86 indi... ... mains, preferably provided with ... 87, 87. Motor 23 is connected across ... mains and controlled by a switch 88. ... 36 is connected across the mains and controlled by a two-way switch 89 so that the lamp 36 may be connected on the one hand, through contacts 82 and 83, directly across the mains or, on the other hand, may be connected across the mains through contacts 82 and 84, wire 94, conductor 91, contactors 51 and 73, lever 48 and conductor 93. Wire 86 is connected to heating elements 32 and 33 through switch 90. Primary heating element 32 is connected by means of conductor 91 to lever arm 47 which latter is divided electrically into two parts by insulator 81. From lever arm 47 the path of the current is through contactors 51 and 73, lever arm 48 and conductor 93 to main 85. Secondary heating element 33 is connected by means of conductor 92, conducting standard 58, conductors 97 and 98 and wire 97 to conductor 91 and thence by the path hereinbefore protected by condenser 96 in addition to condenser 95.

In the operation of the apparatus described, the operator after closing switch 90, by means of operating knob 59 sets the pointers 52 at the desired temperature as indicated on the scale 53. Assuming that all parts are properly adjusted, if the temperature in the receiving chamber 12, and thus the temperature of the thermostatic tubes 76, 76, is below that of the indicated setting, contactor 73 will rest on contactor 51, thereby completing the electrical connection through primary heating element 32. The heat given off from element 32 circulating through chamber 12, freely by convection currents or forcibly by the forced draft of the blower 26, will raise the temperature of the thermostatic tubes 76, 76, which tubes will expand and, because of the non-expansion of rod 79, will cause bar 75 to rise and hence raise lever arm 48 and, if sufficient expansion of thermostatic tubes 76, 76, will break the current through contactors 73 and 51 and thus cut out heating element 32. Then, on the loss of a small quantity of the heat in chamber 12, the temperature of the thermostatic tubes 76, 76, will be lowered and a movement of a lever 48 opposite to that last described above will occur and the contactor 73 will again rest on contactor 51, thus throwing heating element 32 in again. Thus it will be seen that the heat of the chamber 12, which is continuously being lost by conduction through the walls, even though these latter be of the best possible insulation, will be intermittently replaced by means of heating elements 32 operating as hereinbefore described. The capacity of heating element 32, for the more or less low temperatures, should be as low as possible consistent with the amount of heat required, because, for accurate regulation, the quantity of heat thrown in intermittently should have a low ratio to the quantity of heat lost continuously through the walls, otherwise a comparatively large quantity of intermittent heat thrown in would cause a comparatively large fluctuation of the temperature of chamber 12. Now when it is desired to operate at higher temperatures, additional heat is necessary. Therefore, when the operator sets the pointers 52 at a more or less high temperature, lever 47 will carry contactor 56 into contact with contactor 57, thereby throwing secondary heating element 33 into

direct connection with conductor 91 and thus parallel with heating element 32. This heating element 33 is thereafter controlled in a manner similar to that described in connection with heating element 32.

Lamp 35 may be connected directly across the mains as described, whenever it is desired to obtain illumination in chamber 12 continuously, the operator of course not permitting the heat furnished by the lamp to overheat the chamber as might occur with use at low temperatures. In order to use the lamp for observation where there is danger of its heat overheating the chamber, it is connected across the mains by means of wire 94 as described and thus the thermostatic control will not permit overheating in the chamber. In addition, the lamp connected in this latter manner, furnishes the operator with a convenient tell-tale or pilot to inform the operator, by means of the flashes of the lamp, that the apparatus is in proper working order.

It will be observed that levers 47 and 48 rotate on a common center 50, 50. This method of construction causes the contacting surfaces of contactors 51 and 73 to be always in parallel and thus in good electrical contact, regardless of their position on the scale.

The method herein described of adjusting the thermostatic control and of permitting the operator to set the temperature of the chamber 12 at any desired predetermined point as indicated to him by pointers 52 on scale 53, is a very important point in thermostatic construction.

It is obvious that additional heating elements similar to element 33 may be provided without departing from the spirit of the invention, it being understood that the contactors 56 and 57 may be adjusted to suit any required inflow of heat to assist the primary heating element.

It should be further observed that the motor [illegible] blower 26 are to be operated only at [illegible] when the operator desires the greatest uniformity of temperature in chamber 12 which it is possible to obtain. When less uniformity of temperature is desired the motor may remain idle and the insulating plate 22 may [illegible]

air being drawn in by blower 26 from top of the chamber, passed down along rear wall, over the heating elements an in a forced draft adjacent the door thence to the top of the chamber and a around through the blower as described.

Inasmuch as the door is the part of apparatus which suffers the greatest los heat, it is a very desirable feature to c the air which has just been passed over heating elements to be brought immedia to the coolest portion of the bath to co teract in some degree this unavoidable n uniformity.

I do not restrict myself to any of the tails of construction, arrangement of pa or composition of material as shown or d scribed further than the scope of the a pended claims demands.

What I claim and desire to secure by Le ters Patent is:

1. In apparatus of the class described, receiving chamber, a thermostat controll by the temperature of said chamber, a su port, a lever arm having one end pivo to said support, means for actuating lever arm controlled by said thermostat contactor on the other end of said lever a from said pivotal point and distant fr said thermostat, a second lever arm hav one end pivoted to said support con trically with the pivoted end of said mentioned lever arm, a contactor on second lever arm in the path of the tactor on the first mentioned lever arm an electric heating element in circuit said contactors.

2. In apparatus of the class descri receiving chamber, a thermostat con by the temperature of said chamber, adapted to be moved by said therm rocker plate in the path of move said pin, a lever arm carried by said plate, a contactor on said lever a point distant from said pin, a sec tactor in the path of said first n tactor and an electric heating circuit with said contactors.

3. In apparatus of the class de receiving chamber, a pair of le means controlled by the temperatu receiving chamber for automatic trolling the movement of one of

mitting the heat furnished by the lamp to overheat the chamber as might occur with use at low temperatures. In order to use the lamp for observation where there is danger of its heat overheating the chamber, it is connected across the mains by means of wire 24 as described and thus the thermostatic control will not permit overheating in the chamber. In addition, the lamp connected in this latter manner, furnishes the operator with a convenient tell-tale or pilot to inform the operator, by means of the flashes of the lamp, that the apparatus is in proper working order.

It will be observed that levers 47 and 48 rotate on a common center 50, 50. This method of construction causes the contacting surfaces of contactors 51 and 73 to be always in parallel and thus in good electrical contact, regardless of their position on the scale.

The method herein described of adjusting the thermostatic control and of permitting the operator to set the temperature of the chamber 12 at any desired predetermined point as indicated to him by pointers 52 on scale 53, is a very important point in thermostatic construction.

It is obvious that additional heating elements similar to element 38 may be provided without departing from the spirit of the invention, it being understood that the contactors 56 and 57 may be adjusted to suit any required inflow of heat to assist the primary heating element.

It should be further observed that the motor 28 and its attached blower 26 are to be operated only at times when the operator desires the greatest uniformity of temperature in chamber 12 which it is possible to obtain. When less uniformity of temperature is desired the motor may remain idle and the insulating plate 22 may be removed, thus permitting the convection currents of air and the radiated heat from the heating elements to create whatever uniformity of temperature it may.

Insulating plate 22 should fit tightly against the rear and side walls of receiving chamber 12, a space being left between the front edge of plate 22 and the door 17 to provide an exit for the air which has been blown into the space beneath plate 22 by blower 26. By this means the air in the receiving chamber is kept in constant circulation adjacent the walls of the chamber, the air which has just been passed over heating elements to be brought immedia to the coolest portion of the bath to co teract in some degree this unavoidable uniformity.

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2. In apparatus of the class descri receiving chamber, a thermostat con by the temperature of said chamber, adapted to be moved by said therm rocker plate in the path of move said pin, a lever arm carried by said plate, a contactor on said lever arm point distant from said pin, a seco tactor in the path of said first na tactor and an electric heating el circuit with said contactors.

3. In apparatus of the class de receiving chamber, a pair of lev means controlled by the temperature receiving chamber for automatica trolling the movement of one of sa arms, a support to which each of s arms is concentrically pivoted wit ence to the other, a contactor carried of said lever arms adapted to mak with each other and a heating e direct circuit with said contactors.

4. In apparatus of the class de pair of vertically movable contacto mary heating element in circuit contactors, a secondary heating e parallel with said primary heating a contactor insulated from said pair

tactors but controlled by the movement of one of said pair of contactors, a connection from said insulated contactor to that one of the pair of contactors controlling its movement, a contactor in the path of movement of said insulated contactor and a connection from said secondary heating element to said last named contactor.

5. In apparatus of the class described, a pair of vertically movable contactors adjacent each other, the movement of one of said contactors being automatically controlled and the movement of the other positively controlled, a secondary contactor electrically adjacent said positively controlled contactor and moving therewith, a contactor in the path of said secondary contactor, a primary heating element in circuit with said pair of contactors and a secondary heating element adapted to be brought into parallel with said primary heating element when said secondary contactors are in contact.

6. In apparatus of the class described, an air circulation system comprising a main chamber, a blower near the top of said chamber an air passage from said blower to the bottom of said chamber, a secondary air chamber at the bottom of said main chamber into which said air passage from the blower discharges, heat insulating means between said secondary chamber and main chamber, a discharge opening from said secondary chamber into said main chamber at a point opposite the exit from the air passage from the blower and a heating element in said secondary chamber.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

THOMAS B. FREAS.

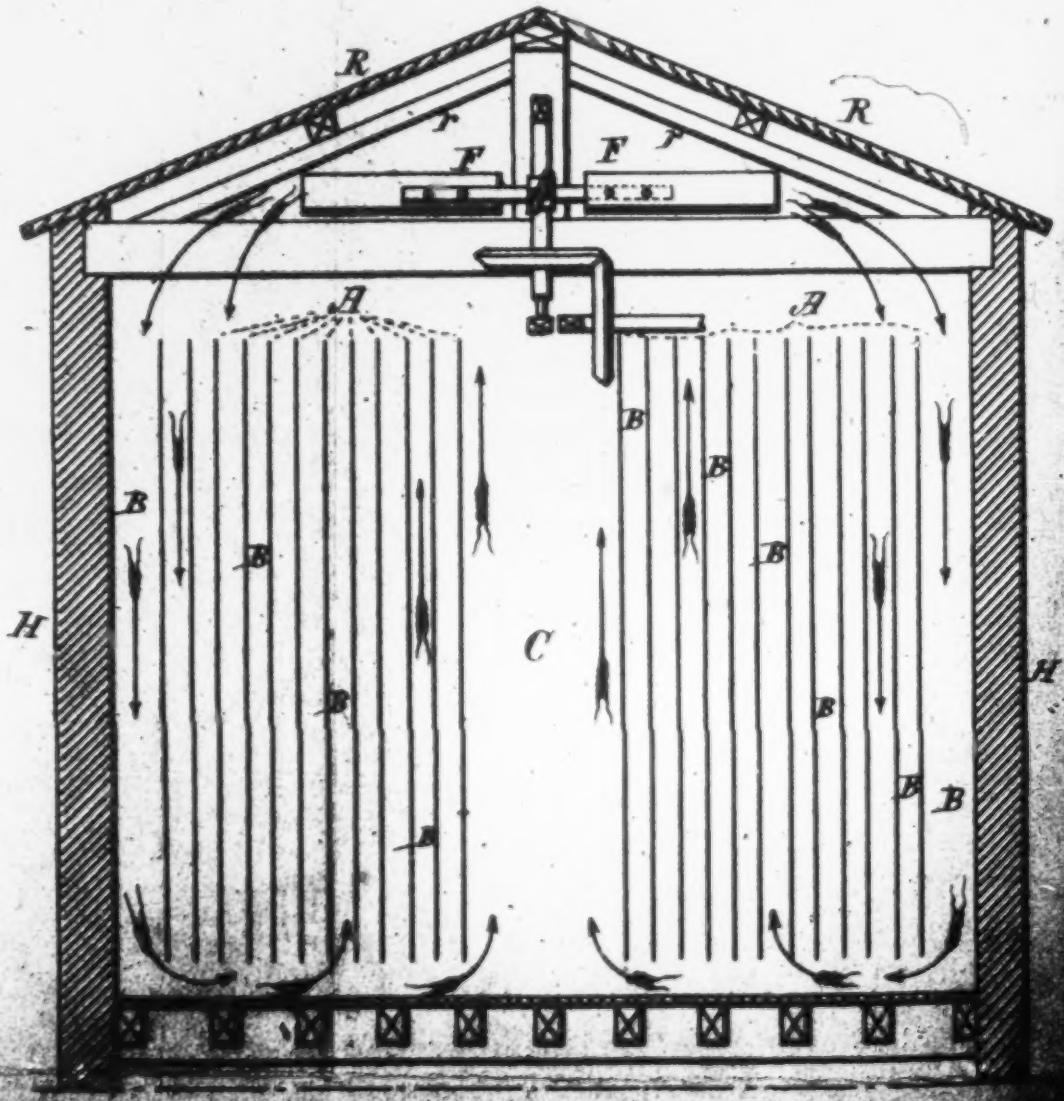
Witnesses:
SEABURY C. MASTICK,
H. G. LEARD.

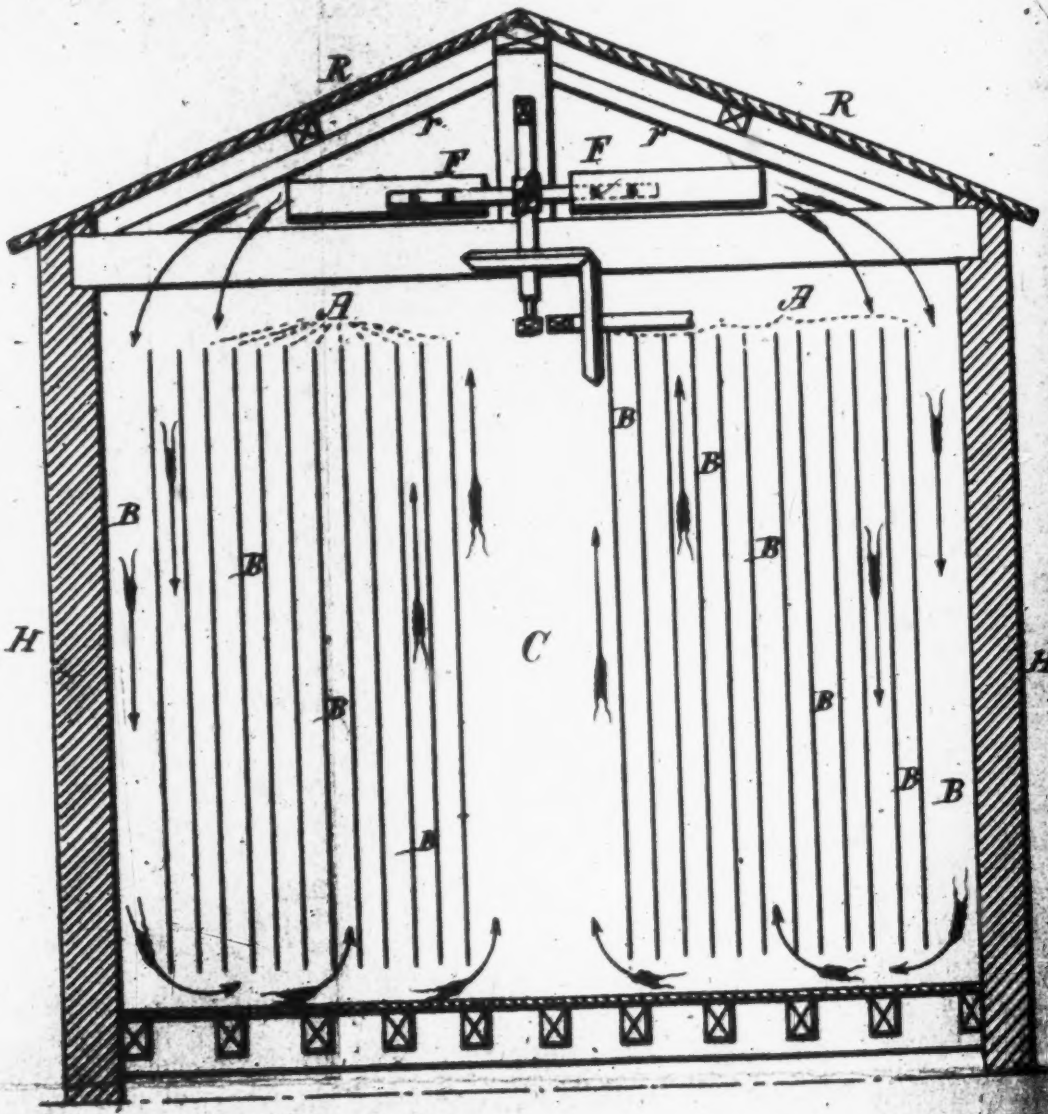
1031

O. LUMPP.

METHOD OF AND MEANS FOR DRYING MATERIALS OF EXTENSIVE SUPERFICIAL AREA.

No. 280,490. Patented July 3, 1883.





Witnesses
William E. Poulter
G. W. Knotts

Inv[illegible]
Oscar [illegible]
pr Henry [illegible]
his att[illegible]

UNITED STATES PATENT OFFICE.

OSCAR LUMPP, OF LYONS, FRANCE.

METHOD OF AND MEANS FOR DRYING MATERIALS OF EXTENSIVE SUPERFICIAL AREA.

SPECIFICATION forming part of Letters Patent No. 290,490, dated July 8, 1883.

Application filed March 17, 1883. (No model.) Patented in France October 20, 1882, No. 151,652.

To all whom it may concern:

Be it known that I, OSCAR LUMPP, a citizen of the French Republic, and resident of Lyons, in the French Republic, have invented certain new and useful Improvements in Methods and of Means for Drying Materials of Extensive Superficial Area, (for which I have obtained Letters Patent in France, No. 151,652, under date of October 20, 1882;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The object of this invention is to establish continuous ascending and descending currents of air in such structures in which materials of extensive superficial area are to be dried—such as hides, cloth, or other textile or fibrous materials in large sheets or stripe—where horizontal currents of air are not available, and even were such available, they would be difficult of establishing, and where vertical or ascending currents alone produce but slow and imperfect results. In the drying of materials such as described above, and more especially in the drying of hides, it is desirable that the operation should be effected as rapidly as possible. This cannot be done with hot air, such being injurious to hides, nor can it be done by horizontal or ascending air-currents. To effect this drying rapidly the entire surface of the material should be exposed to both ascending and descending currents.

The object of my invention is attained by means of a suitable ventilating or suction and blast fan in combination with deflecting-surfaces, said fan being arranged above the material to be dried and centrally thereof, drawing the air up and throwing the latter against [illegible] that will cause it to flow [illegible] jected, deflected thereby, and caused to flow from the roof to the floor below.

The hides A are suspended from rafters, (which I deemed unnecessary to show in the drawing,) at a short distance from one another, thus forming a series of narrow passages, B. Immediately below the fan, and in a line with the axis thereof and the apex of the angle formed by the deflecting-surfaces *r*, the distance between the adjacent hides is greater than that between the succeeding series of hides on opposite sides of this central passage, C, so as to produce a strong and voluminous upward current by the revolution of the fan. This current is projected by the fan F upon the inclined surfaces *r* of the roof, deflected downward thereby, as shown by the arrows, and, after reaching the series of hides, is divided thereby and passes downward through the passages B, formed between two rows of hides, to be drawn up again by the fan through the central passage, C. Of course more or less air will also be drawn up through some of the narrower passages, and in this manner I can effect the drying of hides in a comparatively short time and at a trifling expense. As shown, the fan rotates in suitable supports, and may be driven by toothed gearing or pulley and belt or any other suitable power-transmitting mechanism from any desired prime motor. Such fan may be of any usual or preferred construction, so long as it is arranged with regard to the deflecting-surfaces as described hereinabove.

Of course it will be readily understood that the same results may be obtained with any other material than hides, provided such material is composed of long strips or sheets capable of being suspended vertically to form the air-passages; and for some materials hot instead of cold air may be used, the hot air being injected into the lower part of the structure and caused to circulate as described.

Having thus described my invention, what

SPECIFICATION forming part of Letters Patent No. 280,490, dated July 3, 1883.

Application filed March 17, 1883. (No model.) Patented in France October 20, 1882, No. 151,652.

To all whom it may concern:

Be it known that I, OSCAR LUMPP, a citizen of the French Republic, and resident of Lyons, in the French Republic, have invented certain new and useful Improvements in Methods and of Means for Drying Materials of Extensive Superficial Area, (for which I have obtained Letters Patent in France, No. 151,652, under date of October 20, 1882;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The object of this invention is to establish continuous ascending and descending currents of air in such structures in which materials of extensive superficial area are to be dried—such as hides, cloth, or other textile or fibrous materials in large sheets or strips—where horizontal currents of air are not available, and even were such available, they would be difficult of establishing, and where vertical or ascending currents alone produce but slow and imperfect results. In the drying of materials such as described above, and more especially in the drying of hides, it is desirable that the operation should be effected as rapidly as possible. This cannot be done with hot air, such being injurious to hides, nor can it be done by horizontal or ascending air-currents. To effect this drying rapidly the entire surface of the material should be exposed to both ascending and descending currents.

The object of my invention is attained by means of a suitable ventilating or suction and blast fan in combination with deflecting-surfaces, said fan being arranged above the material to be dried and centrally thereof, drawing the air up and throwing the latter against deflecting-surfaces that will cause it to flow downward in currents divided by the suspended material, whereby the entire surface thereof is exposed to its drying influence.

In the accompanying drawings I have shown in vertical section a drying-house, H, for tanneries, having a gable roof, R, the inner faces, *r*, of which form deflecting-surfaces, against which the air, drawn up by a fan, F, is projected, deflected thereby, and caused to flow from the roof to the floor below.

The hides A are suspended from rafters, (which I deemed unnecessary to show in the drawing,) at a short distance from one another, thus forming a series of narrow passages, B. Immediately below the fan, and on a line with the axis thereof and the apex of the angle formed by the deflecting-surfaces *r*, the distance between the adjacent hides is greater than that between the succeeding series of hides on opposite sides of this central passage, C, so as to produce a strong and voluminous upward current by the revolution of the fan. This current is projected by the fan F upon the inclined surfaces *r* of the roof, deflected downward thereby, as shown by the arrows, and, after reaching the series of hides, is divided thereby and passes downward through the passages B, formed between two rows of hides, to be drawn up again by the fan through the central passage, C. Of course more or less air will also be drawn up through some of the narrower passages, and in this manner I can effect the drying of hides in a comparatively short time and at a trifling expense. As shown, the fan rotates in suitable supports, and may be driven by toothed gearing or pulley and belt or any other suitable power-transmitting mechanism from any desired prime motor. Such fan may be of any usual or preferred construction, so long as it is arranged with regard to the deflecting-surfaces as described hereinabove.

Of course it will be readily understood that the same results may be obtained with any other material than hides, provided such material is composed of long strips or sheets capable of being suspended vertically to form the air-passages, and for some materials hot instead of cold air may be used, the hot air being injected into the lower part of the structure and caused to circulate as described.

Having thus described my invention, what I claim is—

1. The herein-described method of drying materials of extensive superficial area, which consists in suspending the same vertically in a chamber, to form narrow air-passages between them on opposite sides of a wide central passage formed by said suspended material,

drawing air upward through the wide central passage, projecting the air drawn up against deflecting-surfaces to deflect the said air downwardly toward the opposite sides of the wide central passage, substantially as described, for the purposes specified.

2. In an apparatus for drying materials of extensive superficial area, a drying chamber or house having its roof formed by deflecting-surfaces inclined downwardly in opposite directions, a ventilating-fan located centrally of and in proximity to said deflecting-surfaces, the material to be dried being suspended below said fan in rows on opposite sides of a vertical line passing through the apex of the angle formed by the deflecting-surfaces, to form air-passages between such rows of material, as described.

In testimony that I claim the foregoing I have hereunto set my hand this 15th day of February, 1883.

OSCAR LUMPP.

Witnesses:
J. P. A. MARTIN,
BENJAMIN F. PEIXOTTO.

1034

(No Model.)

W. H. ROGERS.

DRIER.

No. 327,900. Patented Oct. 6, 1885.

Fig. 1.

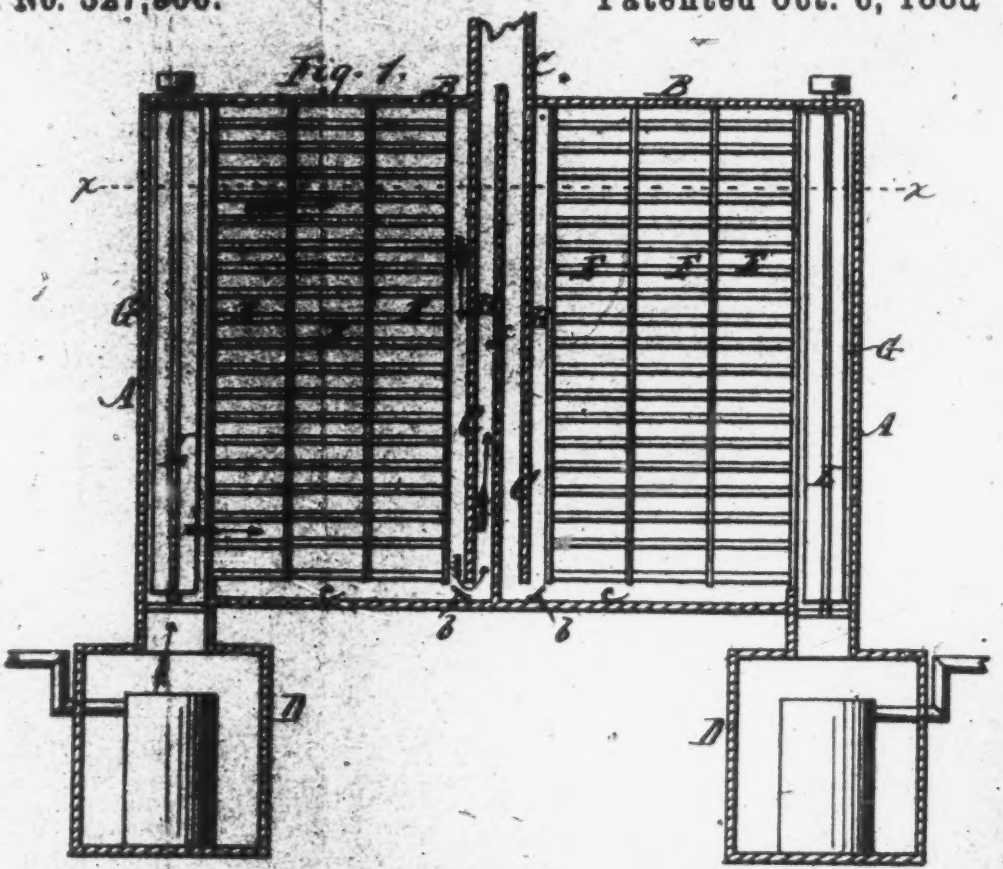
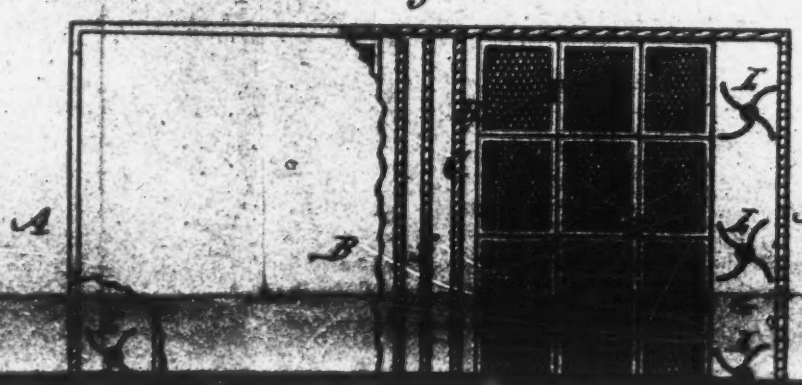


Fig. 2.



No. 327,900. Patented Oct. 6, 1885.

Fig. 1.

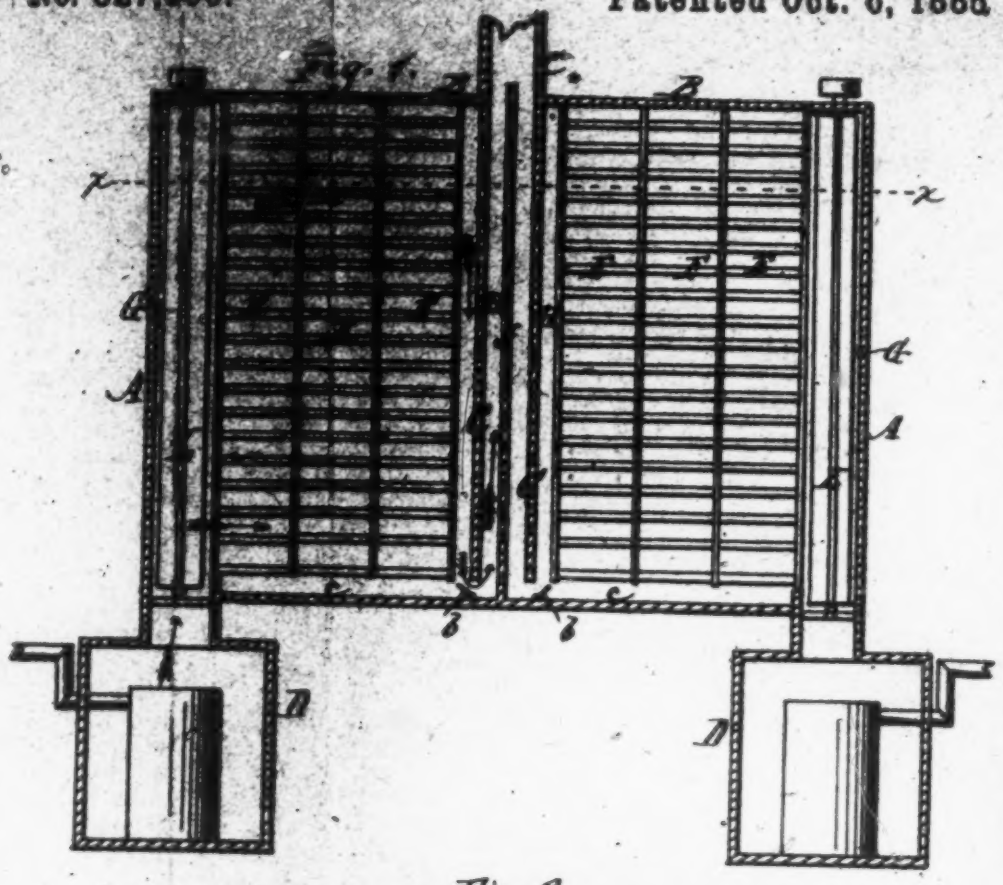
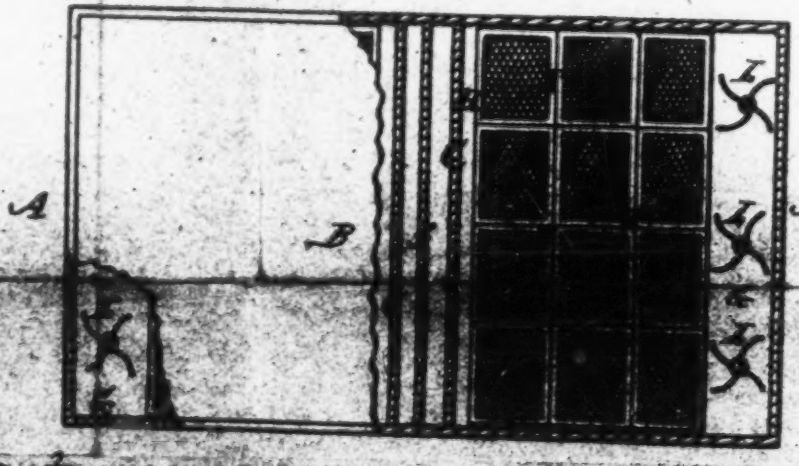


Fig. 2.



Attest.
E. N. Adams
Barnes G. Clark

Inventor.
Wm. H. Rogers,
per R. F. Osgood,
Atty.

UNITED STATES PATENT OFFICE.

WILLIAM H. ROGERS, OF WILLIAMSON, NEW YORK.

DRIER.

SPECIFICATION forming part of Letters Patent No. 237,900, dated October 6, 1885.

Application filed February 24, 1885. Serial No. 156,712. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. ROGERS, of Williamson, in the county of Wayne and State of New York, have invented a certain new and useful Improvement in Driers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section of a drier showing my improvement. Fig. 2 is a horizontal section of the same in line *x x* of Fig. 1.

My improvement relates to driers for fruits, vegetables, and other uses, and is of that kind where the heated air is carried up vertically through flues on opposite sides of two drying-chambers, thence horizontally through and between the trays located in said drying-chambers, thence downward to the bottom of the drying-chambers, and thence upward through a central flue or exit-pipe, where it finally escapes, carrying the moisture off with it.

Heretofore in this class of driers the ability to pass off the moisture and perform the drying operation has depended on the natural draft of the heated air through the apparatus, which, owing to the want of power in the draft, and the indirect and circuitous passage through the apparatus has rendered the operation inoperative.

My invention consists in combining with such drying-chambers and flues, located in the [illegible] flue or blower located in the [illegible] flue, whereby an active current is produced through all parts of the [illegible] drying-chambers, the moisture readily escaping through the exit-flue, and the heated air is under control and can be used over and over again, if desired.

In the drawings, A A represent the walls of the drying-chambers, which may be of any suitable size and shape, and B B the doors thereof. C C are the trays, which are placed in the chambers in the usual manner, and may be of any suitable construction. D D are the flues, which extend up on opposite sides of the chambers, and E E are the flues which extend horizontally through and between the trays, and F F are the flues which extend downward from the chambers to the bottom of the drying-chambers, and G is the exit-flue, which extends upward from the bottom of the chambers through the roof of the building. The trays being placed at such a distance apart that sufficient space is left between the trays for the passage of the draft. In the drawings three sets of chambers are shown in each chamber. These trays are so arranged that a vertical flue-space, G, is left outside the trays, and a corresponding vertical flue-space, H, inside the trays, next to the escape-flue G. The bottom of flue G is open, but is provided with valves or dampers *h h*, by which it may be closed at any time. Beneath the trays in each chamber is a clear passage, *e*, which allows the passage of such vapor as collects there and has a tendency to remain at the bottom of the chamber. Such vapors will be carried off from the passages *e e* through the escape-flue.

f is a partition in the escape-flue G, the same extending up from the bottom of the case to a point above the top of the chamber, and dividing the escape flue into two distinct passages at the bottom, but uniting at the top, as shown.

I I are vertical fans or blowers, located in the outside flue-space, G, of each chamber. Two or more may be used in each flue-space. They extend the whole height of the chamber, covering all the trays, and are so fitted and so to impel the air forward to the exit-flue.

The heat from the furnace will rise by natural draft into the flue-space G. At this point the fans take and force it forward into the upper chambers, and thence downward into the exit-flue G, where it is finally escaped. By this means the heated air is under constant pressure in all parts of the chamber,

DRIER.

SPECIFICATION forming part of Letters Patent No. 337,900, dated [illegible].

Application filed February 21, 1885. Serial No. 156,715. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. ROGERS, of Williamson, in the county of Wayne and State of New York, have invented a certain new and useful Improvement in Driers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section of a drier showing my improvement. Fig. 2 is a horizontal section of the same in line *x x* of Fig. 1.

My improvement relates to driers for fruits, vegetables, and other uses, and is of that kind where the heated air is carried up vertically through flues on opposite sides of two drying-chambers, thence horizontally through and between the trays located in said drying-chambers, thence downward to the bottom of the drying-chambers, and thence upward through a central flue or exit-pipe, where it finally escapes, carrying the moisture off with it.

Heretofore in this class of driers the ability to pass off the moisture and perform the drying operation has depended on the natural draft of the heated air through the apparatus, which, owing to the want of power in the draft, and the indirect and circuitous passage through the apparatus has rendered the operation ineffective.

My invention consists in combining with such an apparatus fans or blowers located in the vertical flues that receive the heat, and forcing the air forward under pressure, whereby an active current is produced through all parts of the apparatus, and the moisture removed, producing an effective drying action, all as hereinafter more fully described.

In the drawings, A shows a casing, which may be of any desired form and construction. B B are two drying-chambers in the opposite sides of the casing, and C is a central flue or exit-passage between the chambers for discharging the draft from both chambers.

D D are furnaces for producing the heat, one being used on each side; or, if desired, a single furnace may be used, supplying both sides. The apparatus may be heated by hot-air furnaces or steam heat.

E E E are sets of two or more sets of drying-trays, placed one above another in the two chambers, the trays being placed at such a distance apart that sufficient space is left between the trays for the passage of the draft. In the drawings three sets of chambers are shown in each chamber. These trays are so arranged that a vertical flue-space, G, is left outside the trays, and a corresponding vertical flue-space, H, inside the trays, next to the escape-flue C. The bottom of flue C is open, but is provided with valves or dampers *b b*, by which it may be closed at any time. Beneath the trays in each chamber is a clear passage, *c*, which allows the passage of such vapor as collects there and has a tendency to remain at the bottom of the chambers. Such vapors will be carried off from the passages *c c* through the escape-flue.

f is a partition in the escape-flue C, the same extending up from the bottom of the case to a point above the top of the chamber, and dividing the center flue into two distinct passages at the bottom, but uniting at the top, as shown.

L L are vertical fans or blowers, located in the outside flue-space, G, of each chamber. Two or more may be used in each flue-space. They extend the whole height of the chamber, covering all the trays, and are so feathered as to impel the air forward to the exit-flue.

The heat from the furnace will rise by natural draft into the flue-space G. At this point the fans take and force it forward horizontally through and between the trays into the inner flue-space, H, and thence downward into the exit-flue C, when it finally escapes. By this means the heated air is under constant pressure at all parts of the chamber, and exerts a regular and uniform draft through all the trays from bottom to top, and effectually carries off all the moisture. It obviates the difficulties heretofore experienced in the passing of the heat through the apparatus, which has solely been done, so far as I know, simply by the natural draft, and this is not sufficient to establish proper circulation to do drying. By using the fans or blowers at the sides of the chambers, and producing a positive blast through, the proper circulation is established and maintained.

This apparatus is specially adapted to drying fruits and vegetables, but may be used for

drying other materials, and I do not wish to restrict myself to any particular use.

If desired, other articles or materials than trays may be placed in the chambers for drying, it only being necessary to leave horizontal spaces between for the passage of the draft.

If desired, a blower may be used for increasing the draft in the exit-flue above the chambers; but it is not necessary under ordinary circumstances.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a drier, the combination of a chamber in which the material to be dried is placed, a furnace for supplying the heat to do the drying, a flue-space in the outer side of the chamber, fans or blowers located in this flue-space for driving the heat inward through the material to be dried, a flue-space in the inner side of the chamber for conducting the heat downward, and an exit-flue for receiving the heat and vapor at the bottom and conducting it off, as set forth.

2. In a drier, the combination of two drying-chambers, a central escape-flue common to both, flue-spaces in the outer and inner sides of both chambers, and fans or blowers located in the outer flue-spaces for forcing the air through horizontally to the exit-pipe, as herein shown and described.

3. In a drier, the combination of two drying-chambers, a central escape-flue common to both and provided with a central partition that extends above the chambers, flue-spaces in the outer and inner sides of both chambers, fans or blowers located in the outer flue-spaces for forcing the air through horizontally to the exit-pipe, and spaces for the vapors at the bottom of the chambers, as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

W. H. ROGERS.

Witnesses:
LEWIS H. ROBIE,
CHARLES H. ROBIE.

1037

No. 891,018. PATENTED JUNE 16, 1908.

L. VERNA.

DRYING ROOM.

APPLICATION FILED OCT. 22, 1907.

2 SHEETS—SHEET 1.

FIG. 1.

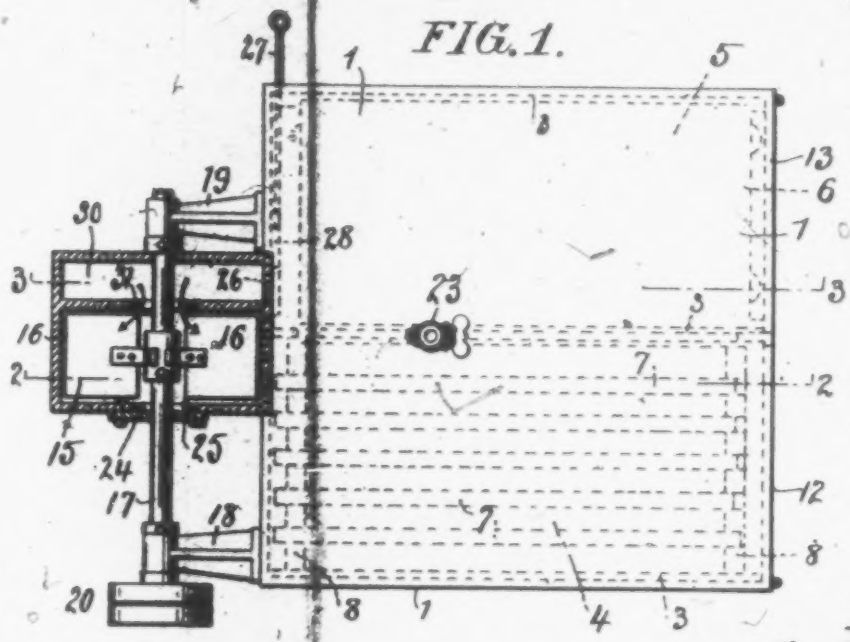


FIG. 6.

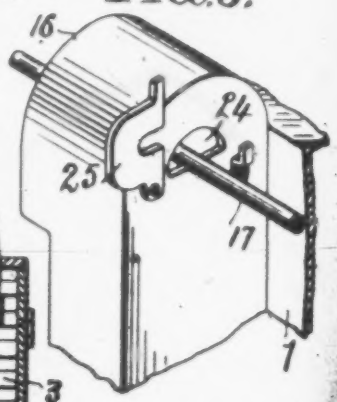
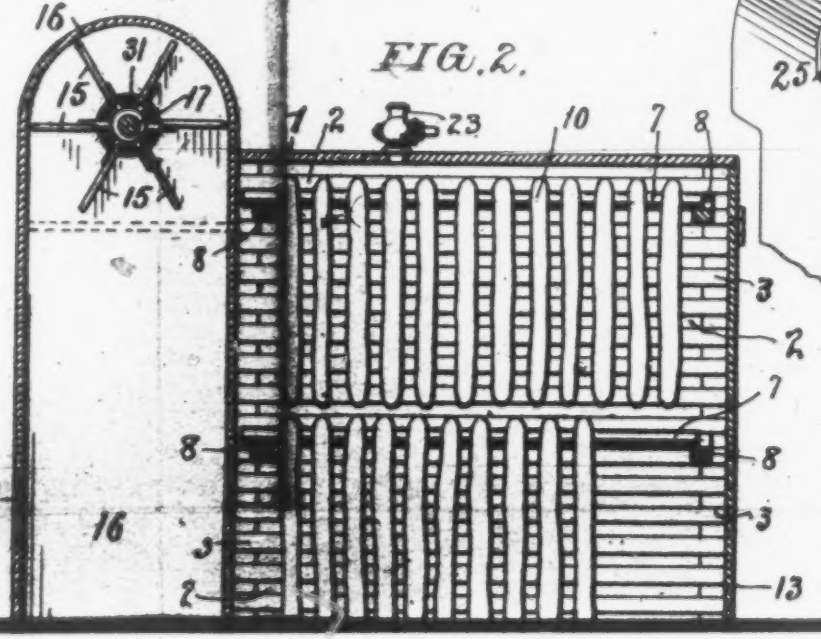


FIG. 2.



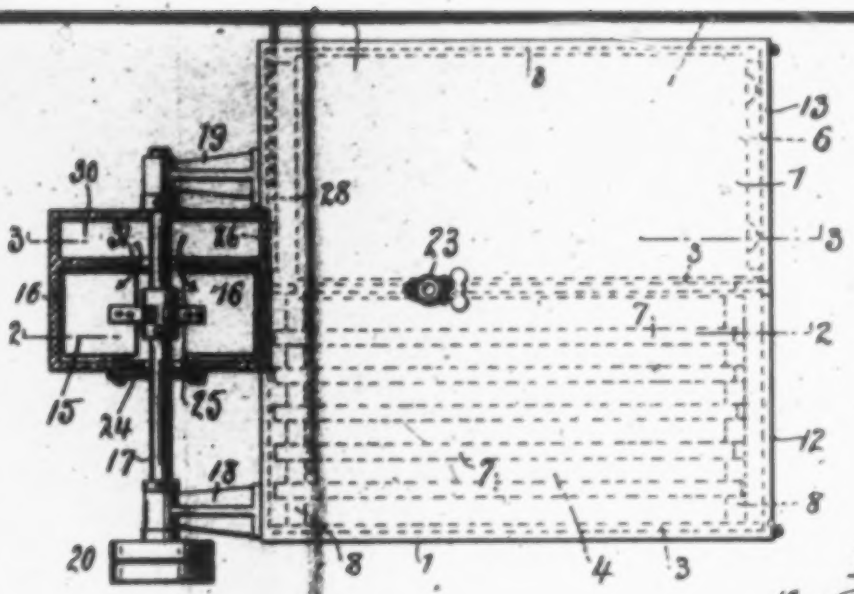


FIG. 6.

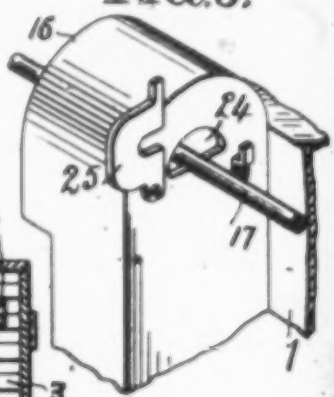
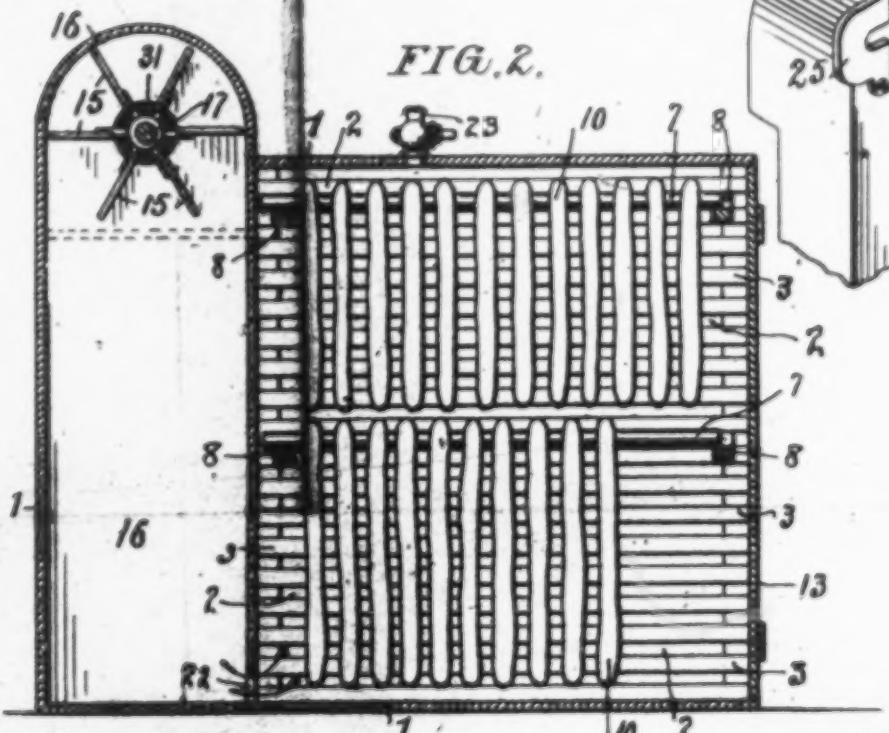


FIG. 2.



Witnesses:
M. R. Cleland
Hugh McCurry, Jr.

Inventor:
Luigi Verna
By his Attorney
F. DeWitt Goodwin

1038

No. 891,010. PATENTED JUNE 16, 1908.

L. VERNA.

DRYING ROOM.

APPLICATION FILED OCT. 22, 1907.

2 SHEETS—SHEET 2.

FIG. 3.

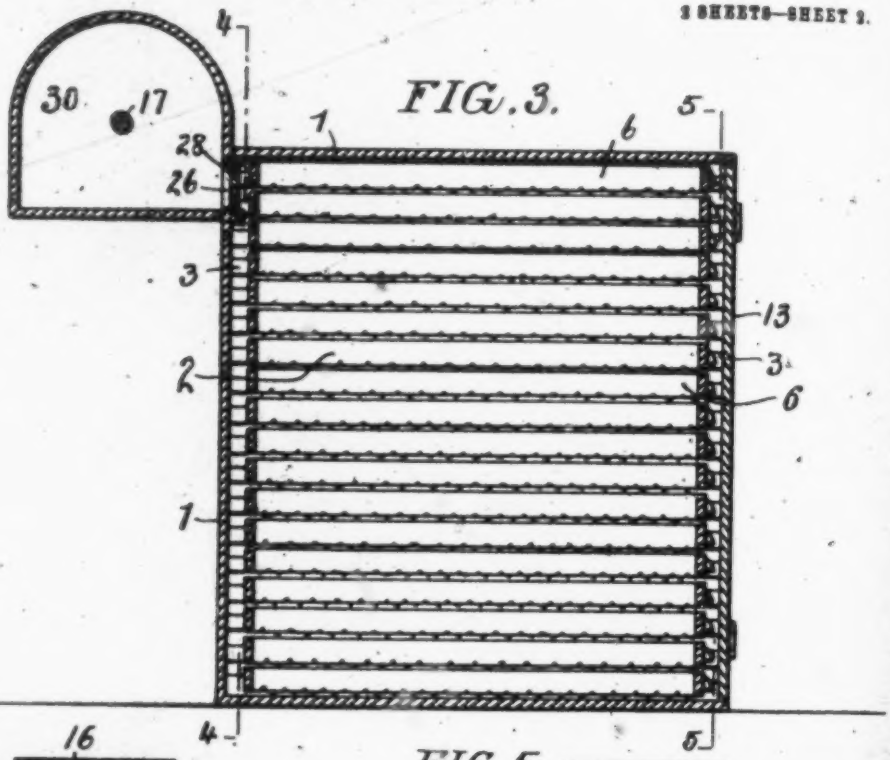


FIG. 4.

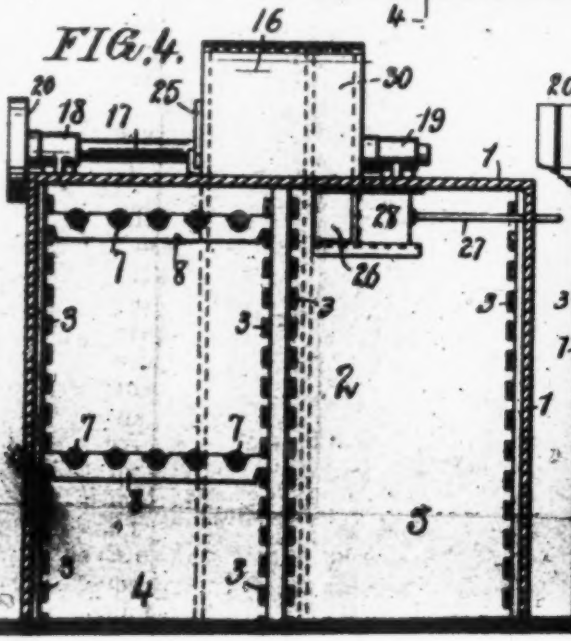


FIG. 5.

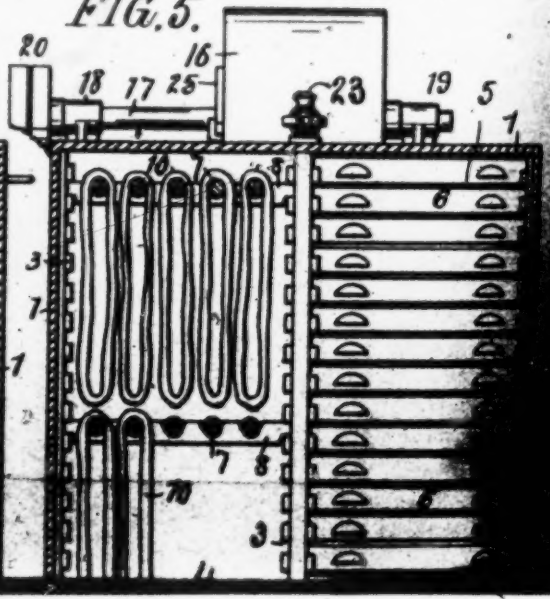


FIG. 3.

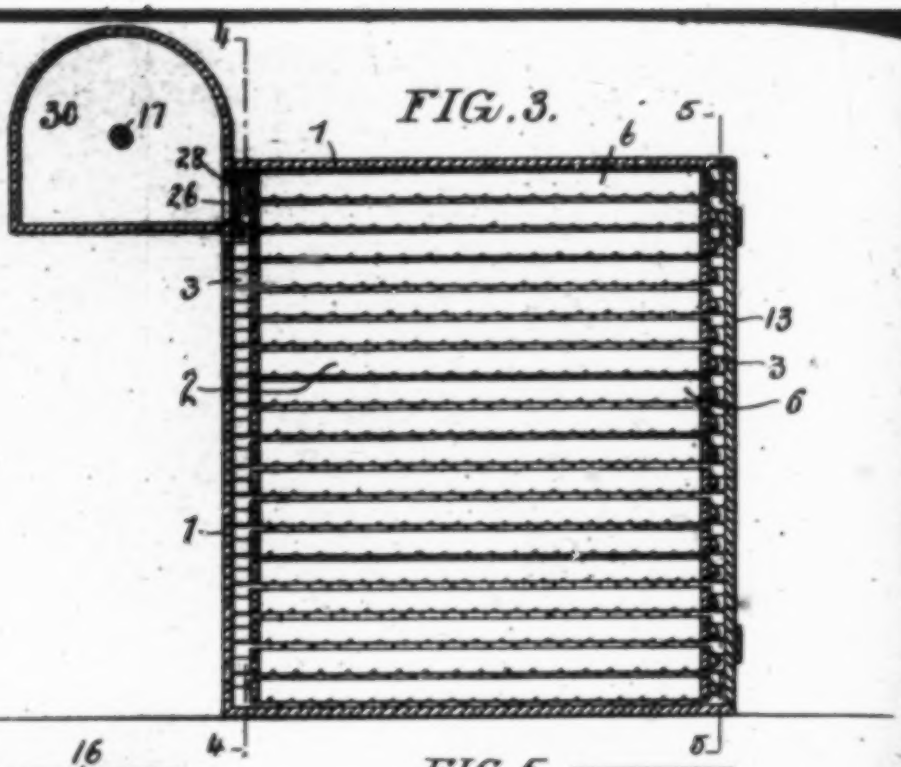


FIG. 4.

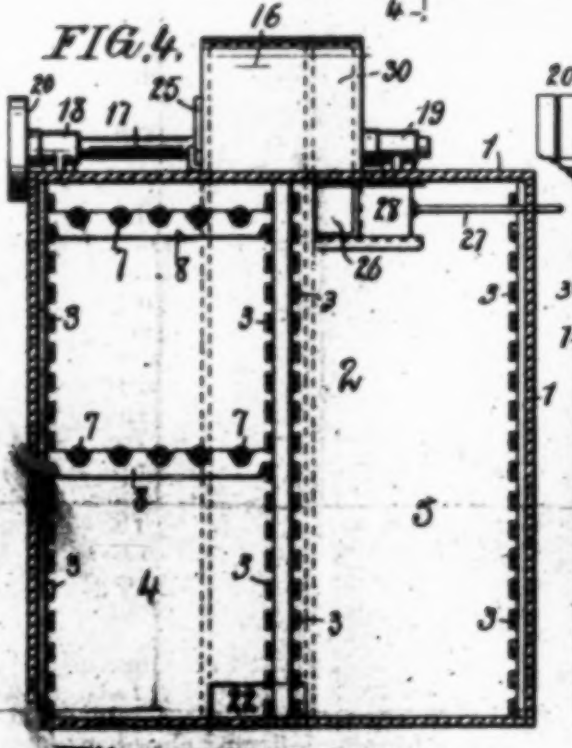
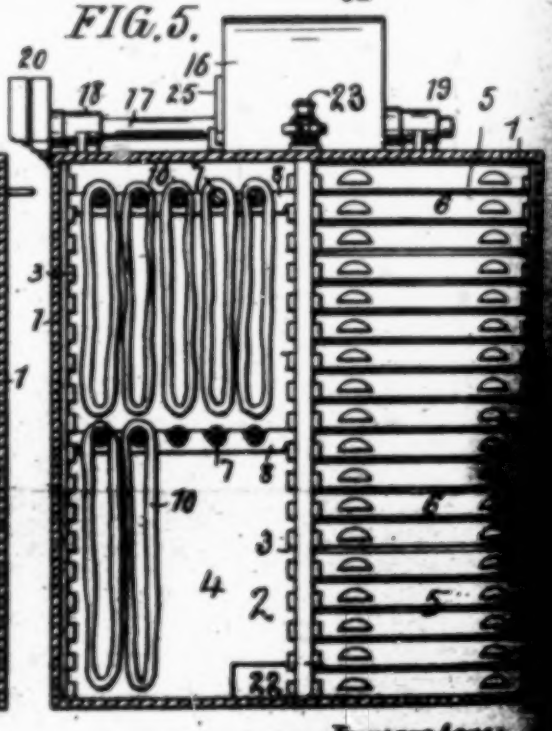


FIG. 5.



Witnesses:
[illegible]
[illegible]

Inventor:
Luigi Verna
By his Attorney
F. Dellett Goodwin

UNITED STATES PATENT OFFICE.

LUIGI VERNA, OF PHILADELPHIA, PENNSYLVANIA.

DRYING-ROOM.

No. 891,019. Specification of Letters Patent. Patented June 16, 1908.

Application filed October 22, 1907. Serial No. 398,611.

To all whom it may concern:

Be it known that I, LUIGI VERNA, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Drying-Rooms, of which the following is a specification.

My invention relates to improvements in a drying machine and particularly relates to a machine for drying alimentary paste or dough used in the manufacture of macaroni.

The object of my invention is to construct a drying machine in which the dough can be quickly dried without causing the surface or crust of the dough to crack, this I accomplish by constructing the drying machine so that the dough may be subjected to an atmospheric pressure which will dry the dough uniformly without causing the surface to crack; a further object of my invention is to provide means for causing the air in the drying machine to circulate and also for admitting fresh air to the same when desired; these together with other novel features of construction of the parts of the machine, which will be more fully hereinafter described, constitute my invention.

Referring to the drawings: Figure 1. is a plan view of my improved drying machine showing the fan box in section; Fig. 2. is a vertical section on line 2—2 Fig. 1; Fig. 3. is a vertical section on line 3—3 Fig. 1; Fig. 4. is a vertical section on line 4—4 Fig. 3; Fig. 5. is a vertical section on line 5—5 Fig. 3; and, Fig. 6. is a perspective view of the fan box.

In the drawings 1 represents a casing forming the drying chamber 2, said casing 1 is preferably rectangular in form and is provided with racks 3 which divide the drying chamber into different compartments 4 and 5 into which compartments may either be [illegible] said cross-pieces 8 are removable, so that either the drawers 6 or the poles 7 may be used in any of the compartments as desired.

The drying machine is provided with large doors 12 and 13, so as to make the interior of the drying chamber accessible.

The drying machine is provided with a fan 15, mounted in a fan box 16. A shaft 17, supported in bearings 18 and 19, carries the said fan and is driven by the belt wheels 20, or any other suitable means.

The fan box 16 extends to the bottom of the drying machine, where the air from the fan passes through the aperture 22 into the drying chamber, which is practically air tight, so that the air will be held under a sufficient pressure to uniformly dry the dough contained in the drawers or suspended upon the poles.

A stop-cock 23 is provided at the top of the drying machine, which may be opened to reduce the air pressure in the drying chamber when desired.

The fan box is provided with a centrally located opening 24 having an adjustable cover 25, as shown in Fig. 6; which may be opened to admit fresh air to the fan.

When it is desired to cause the air in the drying chamber to circulate, the aperture 26, formed at the top of the drying chamber, as shown in Figs. 3 and 4, is opened by means of the rod 27, which is connected with a sliding door 28, adapted to tightly close said aperture 26. When said aperture 26 is opened the air will be drawn from the top of the drying chamber into the return chamber 30, from which it is drawn, through the opening 31, into the fan box 16. The cover 25, of the fan box may be closed so that the air in the drying chamber will circulate, or the cover may be opened to admit fresh air as desired.

Having thus [illegible]

No. 891,019. Specification of Letters Patent. Patented June 16, 1908.

Application filed October 23, 1907. Serial No. 398,611.

To all whom it may concern:

Be it known that I, LUIGI VERNA, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Drying-Rooms, of which the following is a specification.

My invention relates to improvements in a drying machine and particularly relates to a machine for drying alimentary paste or dough used in the manufacture of macaroni.

The object of my invention is to construct a drying machine in which the dough can be quickly dried without causing the surface or crust of the dough to crack, this I accomplish by constructing the drying machine so that the dough may be subjected to an atmospheric pressure which will dry the dough uniformly without causing the surface to crack; a further object of my invention is to provide means for causing the air in the drying machine to circulate and also for admitting fresh air to the same when desired; these together with other novel features of construction of the parts of the machine, which will be more fully hereinafter described, constitute my invention.

Referring to the drawings: Figure 1. is a plan view of my improved drying machine showing the fan box in section; Fig. 2. is a vertical section on line 2—2 Fig. 1; Fig. 3. is a vertical section on line 3—3 Fig. 1; Fig. 4. is a vertical section on line 4—4 Fig. 3; Fig. 5. is a vertical section on line 5—5 Fig. 3; and, Fig. 6. is a perspective view of the fan box.

In the drawings 1 represents a casing forming the drying chamber 2, said casing 1 is preferably rectangular in form and is provided with racks 3 which divide the drying chamber into different compartments 4 and 5 into which compartments may either be placed the drawers 6, or poles 7, supported upon racks or guides 8, provided for that purpose. The drawers have bottoms formed of wire mesh, upon which is placed the short pieces of dough. The dough is also dried in long coils, such as shown at 10. These coils of dough are hung upon the poles 7, which are suspended between the said cross-pieces 8, which in turn rest upon the racks 3. The said cross-pieces 8 are removable, so that either the drawers 6 or the poles 7 may be used in any of the compartments as desired.

The drying machine is provided with large doors 12 and 13, so as to make the interior of the drying chamber accessible.

The drying machine is provided with a fan 15, mounted in a fan box 16. A shaft 17, supported in bearings 18 and 19, carries the said fan and is driven by the belt wheels 20, or any other suitable means.

The fan box 16 extends to the bottom of the drying machine, where the air from the fan passes through the aperture 22 into the drying chamber, which is practically air tight, so that the air will be held under a sufficient pressure to uniformly dry the dough contained in the drawers or suspended upon the poles.

A stop-cock 23 is provided at the top of the drying machine, which may be opened to reduce the air pressure in the drying chamber when desired.

The fan box is provided with a centrally located opening 24 having an adjustable cover 25, as shown in Fig. 6; which may be opened to admit fresh air to the fan.

When it is desired to cause the air in the drying chamber to circulate, the aperture 26, formed at the top of the drying chamber, as shown in Figs. 3 and 4, is opened by means of the rod 27, which is connected with a sliding door 28, adapted to tightly close said aperture 26. When said aperture 26 is opened the air will be drawn from the top of the drying chamber into the return chamber 30, from which it is drawn, through the opening 31, into the fan box 16. The cover 25, of the fan box may be closed so that the air in the drying chamber will circulate, or the cover may be opened to admit fresh air as desired.

Having thus described my invention I claim and desire to secure by Letters Patent:

In a drying room, the combination of a casing forming a drying chamber, a fan box located adjacent said drying chamber and having an aperture formed therein for admitting air to the lower portion of said drying chamber, a fan in said fan box, said drying chamber having an aperture formed in the

upper portion thereof, a return chamber communicating with said aperture in the upper portion of said drying chamber and with said fan box, means for closing said last mentioned aperture, racks formed in said drying chamber and means supported upon said racks for carrying the articles to be dried.

In testimony whereof I affix my signature in presence of two witnesses.

LUIGI VERNA.

Witnesses:
JOSEPH B. LANNING,
J. F. G. ATTLIN.

1041

M. E. BRADLEY.

STOREHOUSE FOR VEGETABLES.

APPLICATION FILED SEPT. 19, 1908.

934,274. Patented Sept. 14, 1909.

2 SHEETS—SHEET 1.

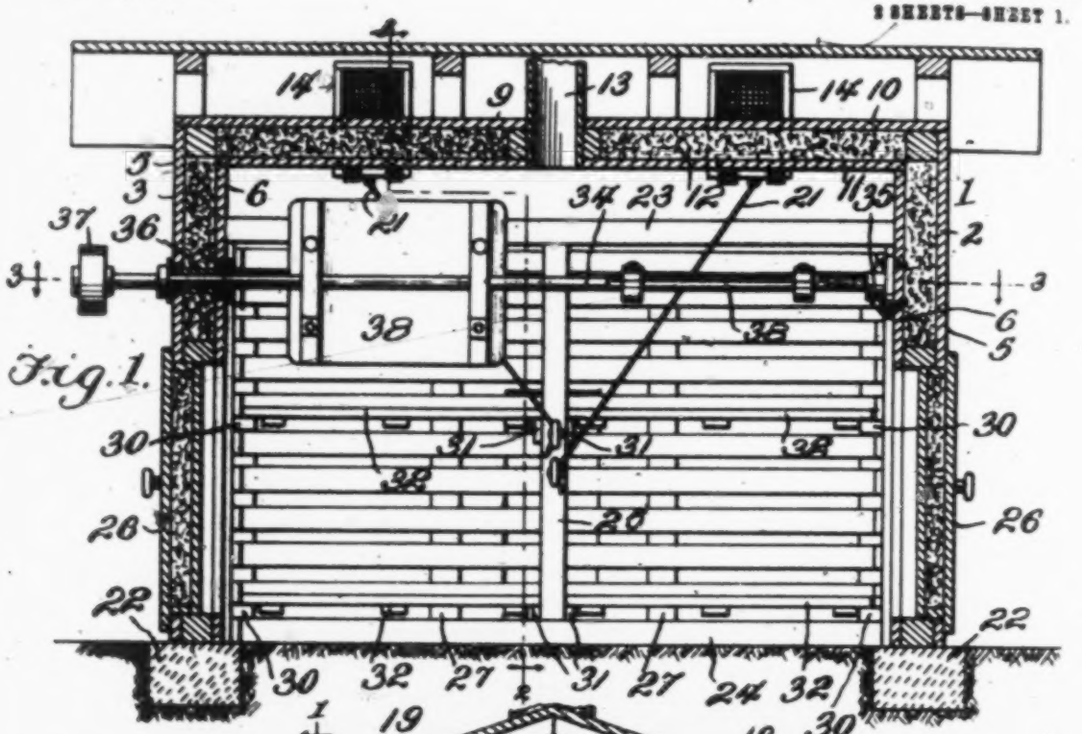


Fig. 1.

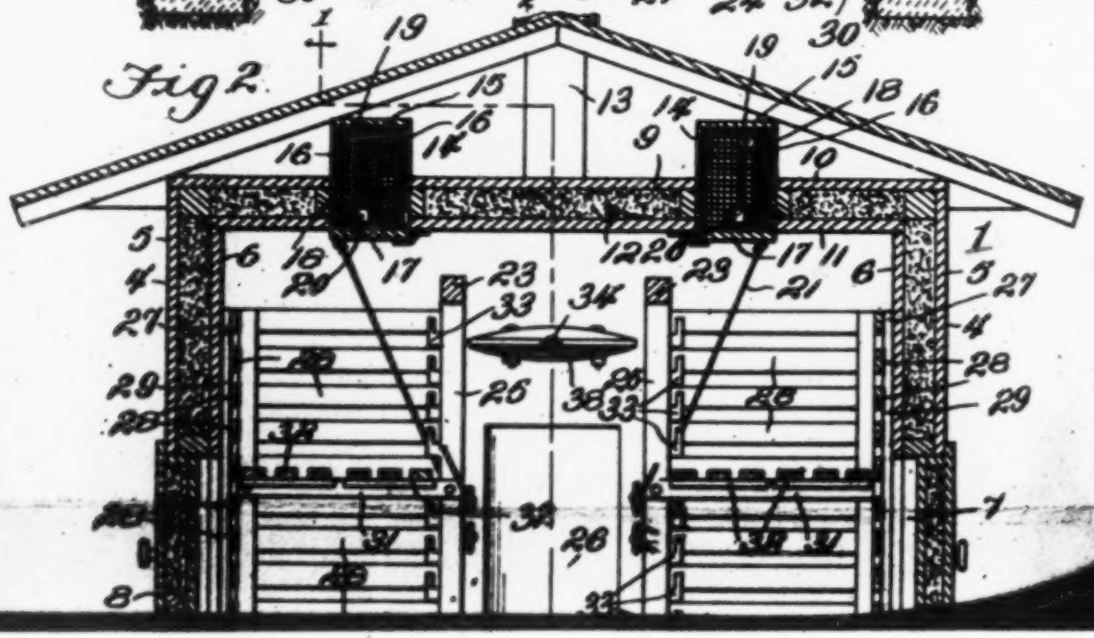


Fig 2.

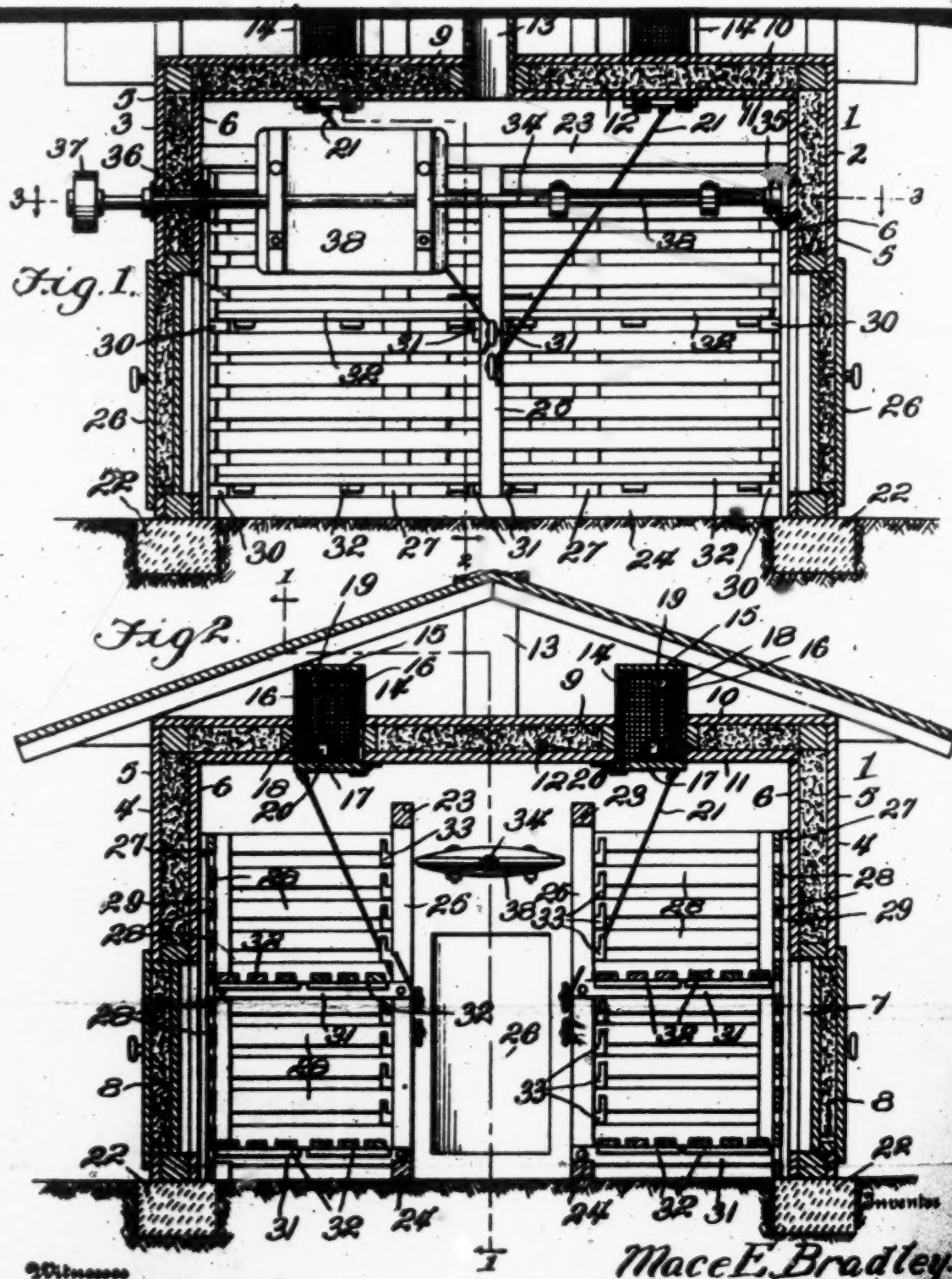


Fig. 1.
Fig 2.
Witnesses
J. F. L. Wright.
Inventor
Mace E. Bradley.
By Victor J. Evans
Attorney

1042

M. E. BRADLEY.

STOREHOUSE FOR VEGETABLES.

APPLICATION FILED SEPT. 19, 1908.

934,274. Patented Sept. 14, 1909.

2 SHEETS—SHEET 1.

Fig. 3.

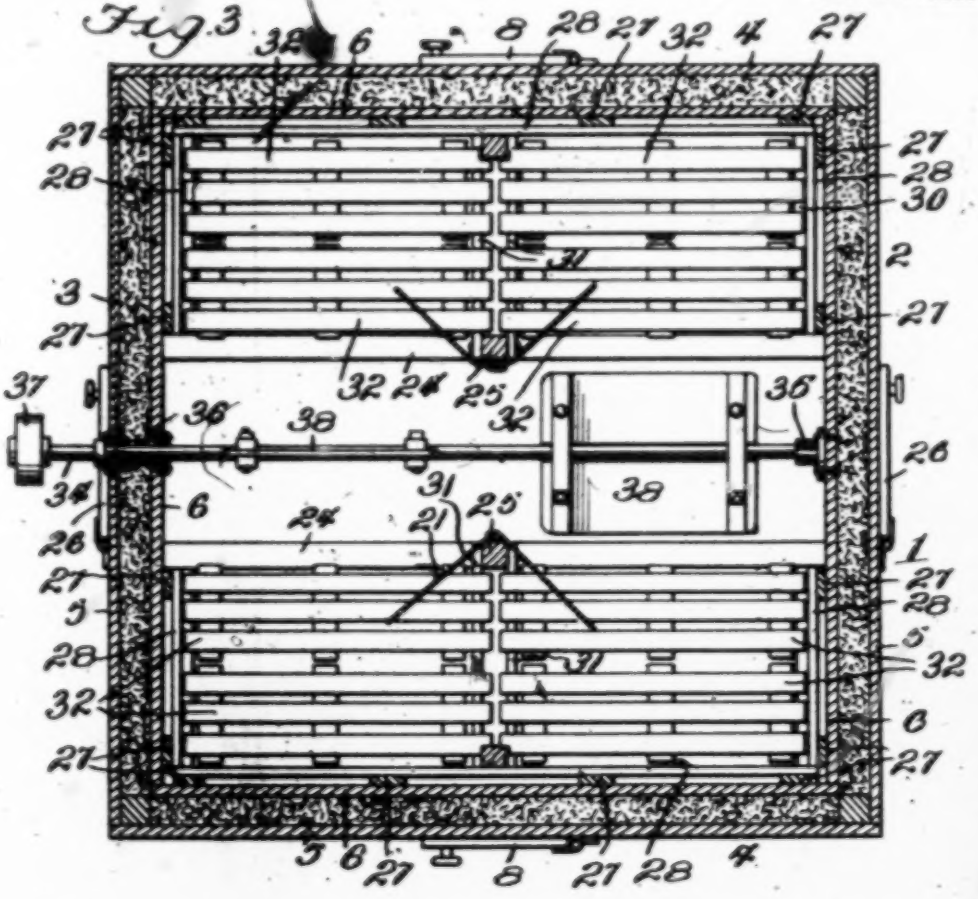
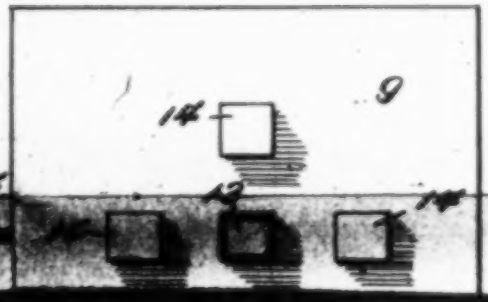


Fig. 4.



934,274.

Patented Sept. 14, 1909.

2 SHEETS—SHEET 2.

Fig. 3

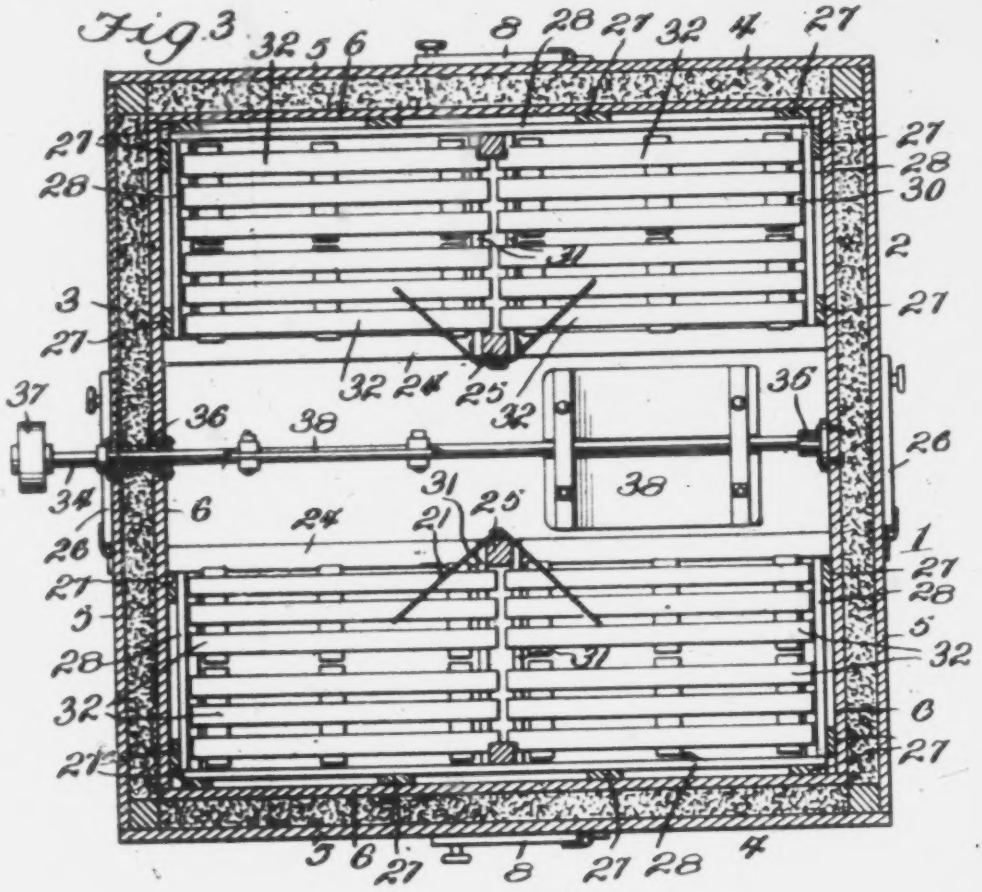
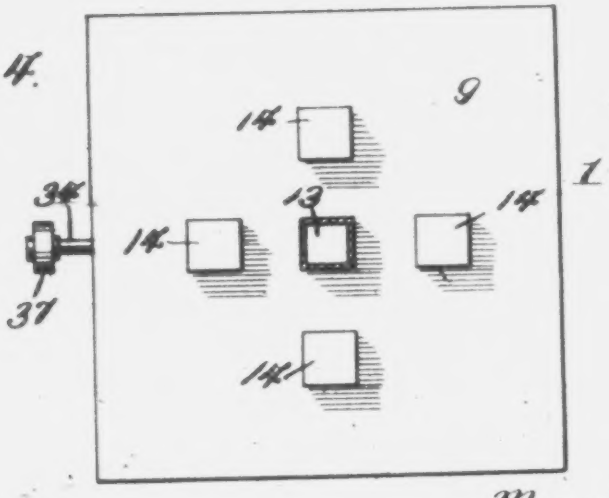


Fig. 4.



Witnesses

J. T. L. Wright

Jan A. Koehl

Inv

Mace E. Brad

By Victor J. Evan

UNITED STATES PATENT OFFICE.

MACE E. BRADLEY, OF BOONEVILLE, ARKANSAS.

STOREHOUSE FOR VEGETABLES.

934,274. Specification of Letters Patent. Patented Sept. 14, 1909.

Application filed September 19, 1908. Serial No. 453,754.

To all whom it may concern:

Be it known that I, MACE E. BRADLEY, a citizen of the United States, residing at Booneville, in the county of Logan and State of Arkansas, have invented new and useful Improvements in Storehouses for Vegetables, of which the following is a specification.

This invention relates to the class of preserving and more particularly to store houses for vegetables, and has for an object to provide a house of this character especially adapted for storing potatoes and to provide effective means to effect an artificial circulation of air to absorb the moisture from the potatoes or vegetables.

A further object of this invention is to provide simple forms of bins for retaining the potatoes at convenient points in the house, and to provide novel forms of ventilators.

Other objects and advantages will be apparent as the nature of the invention is better disclosed, and it will be understood that changes within the scope of the claim may be resorted to without departing from the spirit of the invention.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a vertical section through the house, Fig. 2 is a view taken on the line 2—2 of Fig. 1, Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 1, Fig. 4 is a top plan view.

Referring now more particularly to the drawings, there is shown a store house 1 which preferably consists of a front wall 2, a rear wall 3, and side walls 4. The said walls are each formed from an outer section 5 and an inner section 6, and as clearly shown upon reference to the drawings, sawdust or other insulating material is placed [illegible] forming the said walls. with a top 15, foraminous walls 16, and a hinged door 17. The doors 17 have connected thereto ends of cords or similar flexible elements 18 which are passed over pulleys 19, and the free ends of the said cords or elements are provided with weights 20 adapted to hold the said door 17 in closed position. Suitable operating cords or the like 21 are connected to the doors 17 and their free ends are connected in a suitable manner to cleats or the like which may be arranged or located at suitable points in the house. It will be seen that upon operating the cords 21 the doors 17 of the ventilators may be conveniently opened to allow the desired quantity of air to enter the house as is obvious. The lower ends of the walls are preferably mounted upon a concrete or stone foundation as indicated at 22.

Spaced beams 23 are located adjacent to the top or floor 9 and these beams are connected at their ends to the walls 2 and 3. Similar beams 24 are located at the lower end of the house and are connected at their ends to the walls 2 and 3, and the said beams 23 are connected by vertical uprights 25. The construction is such that the space between the beams forms an aisle, and at each end of the said aisle a door 26 is provided which may be used as entrance and exit doors as will be readily understood. Each wall is provided upon its inner face with a series of vertically disposed slats or like elements 27, and a plurality of horizontally disposed slats 28 are secured to the said slats 27, and are disposed in spaced relation to each other as clearly shown in Fig. 2 of the drawings. The construction of the slats 27 and 28 is such that air chambers 29 are formed between the walls of the house and the said slats 28 and thus effects a thorough ventilation. A series of cleats 30 are secured to the walls 2 and 3, upon their inner faces and

To all whom it may concern:

Be it known that I, MACE E. BRADLEY, a citizen of the United States, residing at Booneville, in the county of Logan and State of Arkansas, have invented new and useful Improvements in Storehouses for Vegetables, of which the following is a specification.

This invention relates to the class of preserving and more particularly to store houses for vegetables, and has for an object to provide a house of this character especially adapted for storing potatoes and to provide effective means to effect an artificial circulation of air to absorb the moisture from the potatoes or vegetables.

A further object of this invention is to provide simple forms of bins for retaining the potatoes at convenient points in the house, and to provide novel forms of ventilators.

Other objects and advantages will be apparent as the nature of the invention is better disclosed, and it will be understood that changes within the scope of the claim may be resorted to without departing from the spirit of the invention.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a vertical section through the house, Fig. 2 is a view taken on the line 2—2 of Fig. 1, Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 1, Fig. 4 is a top plan view.

Referring now more particularly to the drawings, there is shown a store house 1 which preferably consists of a front wall 2, a rear wall 3, and side walls 4. The said walls are each formed from an outer section 5 and an inner section 6, and as clearly shown upon reference to the drawings, sawdust or other insulating material is placed between the sections forming the said walls. The walls 4 are each provided with a door opening 7 and a door 8, the doors being constructed in the manner identical to the construction of the walls of the house. A top or floor 9 is provided and consists of spaced members 10 and 11 between which is shown sawdust or the like 12. The top or floor 9 is provided with a centrally located flue 13 which opens into the house as clearly shown in Fig. 1 of the drawings, and the said top or floor is provided with a plurality of ventilators 14 which are preferably of rectangular form and are each provided with a top 15, foraminous walls 16, and a hinged door 17. The doors 17 have connected thereto ends of cords or similar flexible elements 18 which are passed over pulleys 19, and the free ends of the said cords or elements are provided with weights 20 adapted to hold the said door 17 in closed position. Suitable operating cords or the like 21 are connected to the doors 17 and their free ends are connected in a suitable manner to cleats or the like which may be arranged or located at suitable points in the house. It will be seen that upon operating the cords 21 the doors 17 of the ventilators may be conveniently opened to allow the desired quantity of air to enter the house as is obvious. The lower ends of the walls are preferably mounted upon a concrete or stone foundation as indicated at 22.

Spaced beams 23 are located adjacent to the top or floor 9 and these beams are connected at their ends to the walls 2 and 3. Similar beams 24 are located at the lower end of the house and are connected at their ends to the walls 2 and 3, and the said beams 23 are connected by vertical uprights 25. The construction is such that the space between the beams forms an aisle, and at each end of the said aisle a door 26 is provided which may be used as entrance and exit doors as will be readily understood. Each wall is provided upon its inner face with a series of vertically disposed slats or like elements 27, and a plurality of horizontally disposed slats 28 are secured to the said slats 27, and are disposed in spaced relation to each other as clearly shown in Fig. 2 of the drawings. The construction of the slats 27 and 28 is such that air chambers 29 are formed between the walls of the house and the said slats 28 and thus effects a thorough ventilation. A series of cleats 30 are secured to the walls 2 and 3, upon their inner faces, and similar cleats 31 are secured to the uprights 25 and to the walls 4 of the house as will be seen upon reference to Figs. 1 and 2 of the drawings, and these cleats are thus adapted to support a plurality of slatted platforms 32. It will be seen that by providing the slatted platforms 32 and arranging the same in the manner shown a plurality of compartments or bins are provided for the reception of potatoes or vegetables to be treated, and access may be had to the said compartments or bins from the aisle previously described and to prevent the contents of the

bins from falling into the aisle I provide a plurality of elements 33 adapted to receive slats or the like as will be clearly understood.

Beneath the top or floor 9 of the house, and disposed between the uprights 25 is shown a horizontal shaft 34 having one of its ends journaled in a bearing 35 upon the wall 2, and the other end of the said shaft is extended through a bushing 36 carried by the wall 3, and carries a driven pulley 37 which may receive its power by means of any suitable motor. The shaft is provided with a plurality of fan blades 38 arranged or disposed in a manner to deliver air current into the bins or compartments previously described.

In operation, potatoes or vegetables to be treated are placed in the bins, and the doors 17 of the ventilators are opened to the desired extent to permit a fresh supply of air. After the doors of the house have been securely closed, the shaft 34 is driven in the manner previously described, and by means of the fan blades 38 upon the shaft, air currents will be effectively discharged throughout the interior of the house and moisture from the potatoes will be effectively evaporated.

A gable roof 19ª is provided and is located directly above the ventilators 14 to protect the same and which has its outer edges extending beyond the upper ends of the vertical walls forming the house but in spaced relation thereto so that the proper amount of natural air can be conveyed to the ventilators.

Having thus described the invention, what is claimed as new, is:—

In a preserving house of the class specified, an inclosure having a plurality of bins disposed therein and arranged with respect to each other to form a centrally located aisle, said inclosure having doors at the ends of the aisle, said inclosure having a top portion provided with a series of ventilators formed of foraminous material and having their upper portions extended above the top of the housing, doors adapted to normally close the lower ends of the ventilators, operating cords connected with the doors and extending into the said aisle, a gable roof carried by the inclosure and having portions adjacent to its outer edges disposed in spaced relation to the top of the inclosure, a centrally located flue extending from the roof into the inclosure, and a longitudinally extending fan shaft revolubly connected at its ends with the walls of the inclosure at the ends of the said aisle.

In testimony whereof I affix my signature in presence of two witnesses.

MACE E. BRADLEY.

Witnesses:
JOHN H. WHITE,
W. A. RATTENER.

1045

J. SCHMIDT & H. SCHÜTTERLE.

APPARATUS FOR DRYING MACARONI AND LIKE BAKERY PRODUCTS.

APPLICATION FILED JUNE 9, 1911.

1,010,809.

Patented Dec. 5, 1911.

5 SHEETS—SHEET 1.

Fig. 1

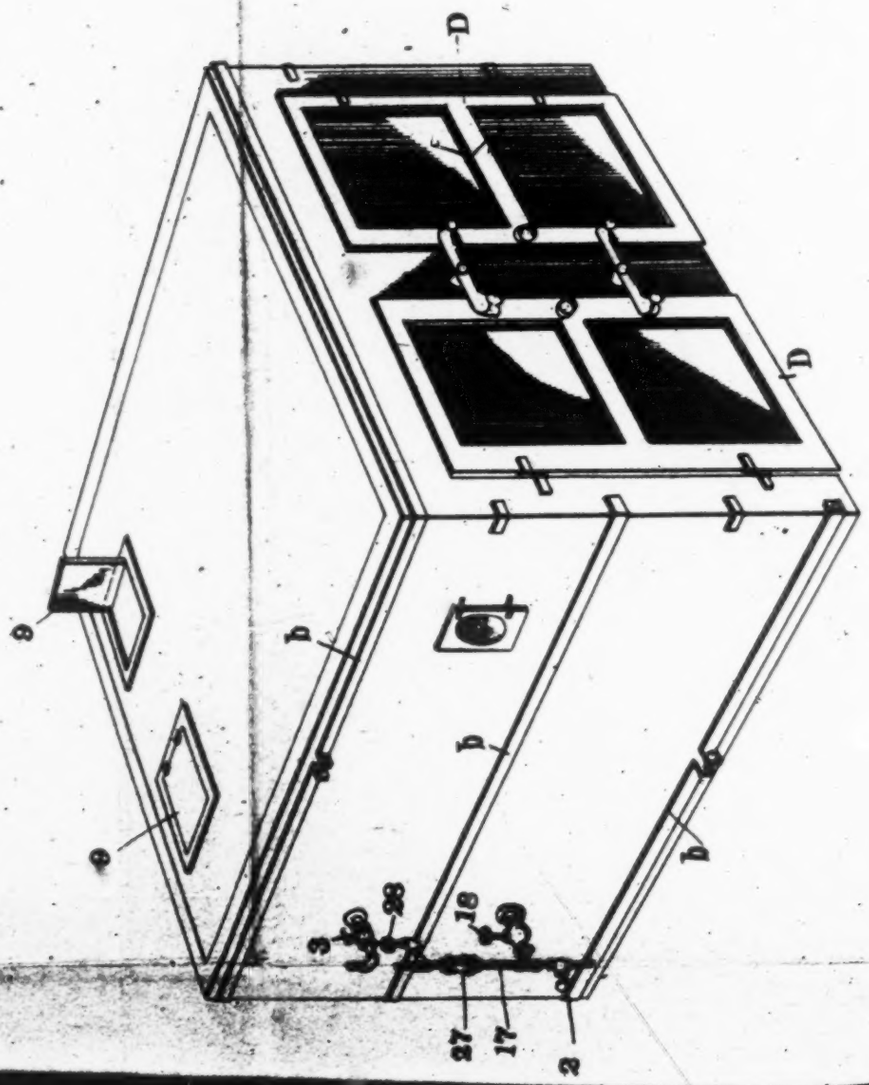
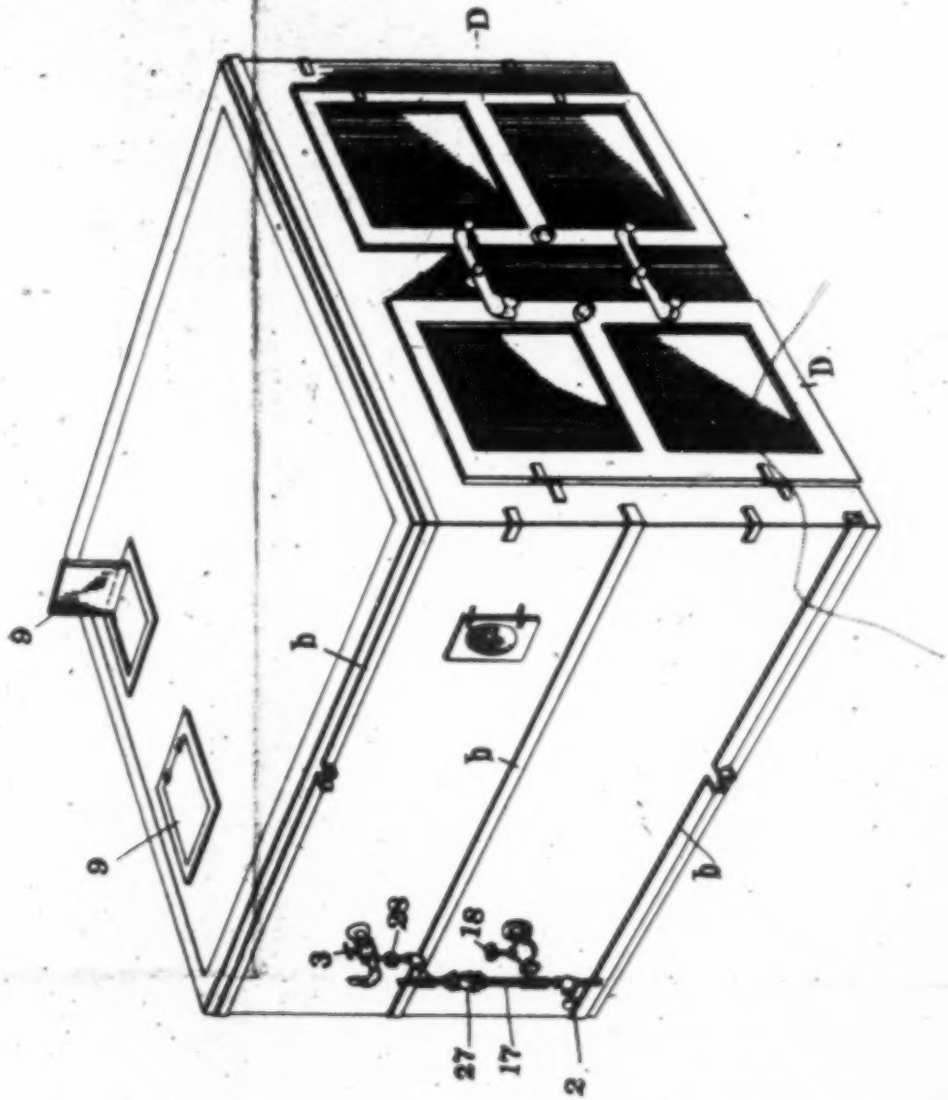


Fig. 1



ATTEST

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J. C. Mussun.

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HENRY SCHÜTTERLE.
BY Fisher & Moore ATTYS.

1046

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APPARATUS FOR DRYING MACARONI AND LIKE BAKERY PRODUCTS.

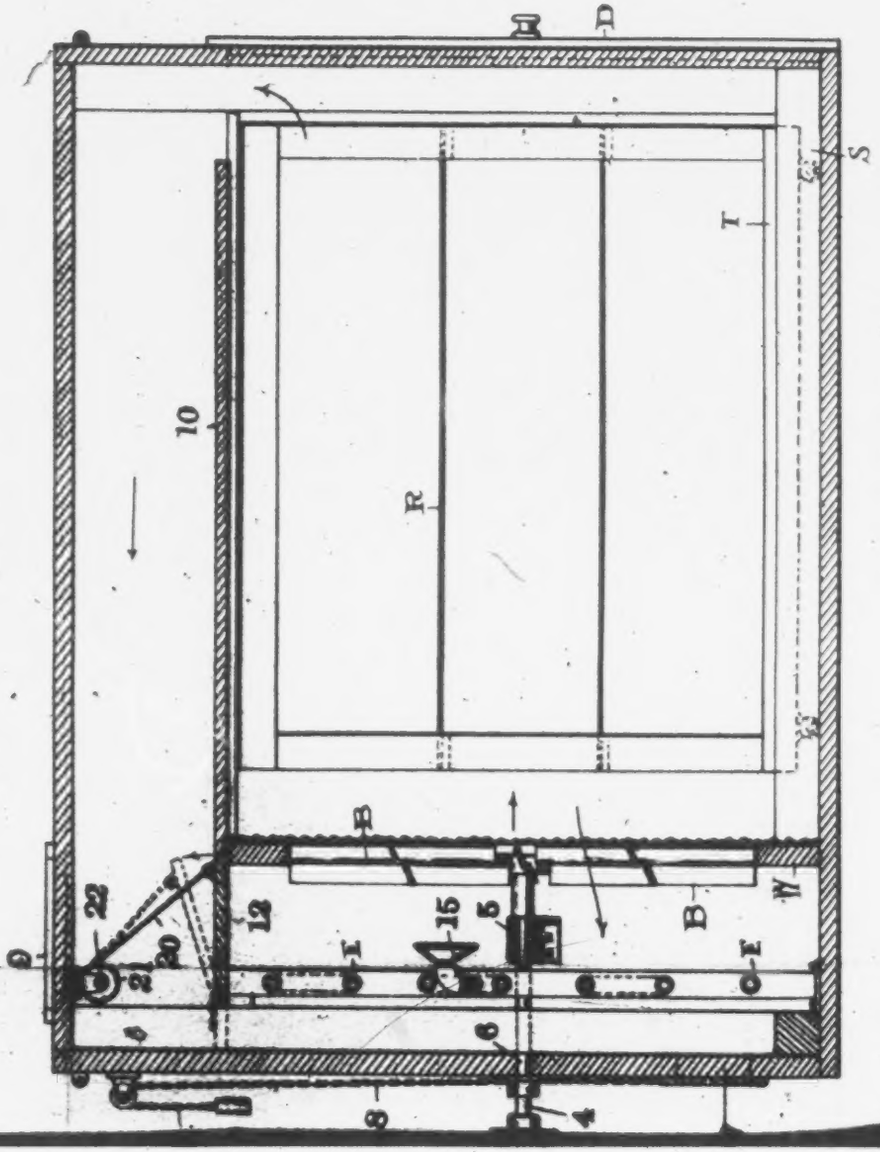
APPLICATION FILED JUNE 9, 1911.

1,010,809.

Patented Dec. 5, 1911.

5 SHEETS—SHEET 2

Fig. 2



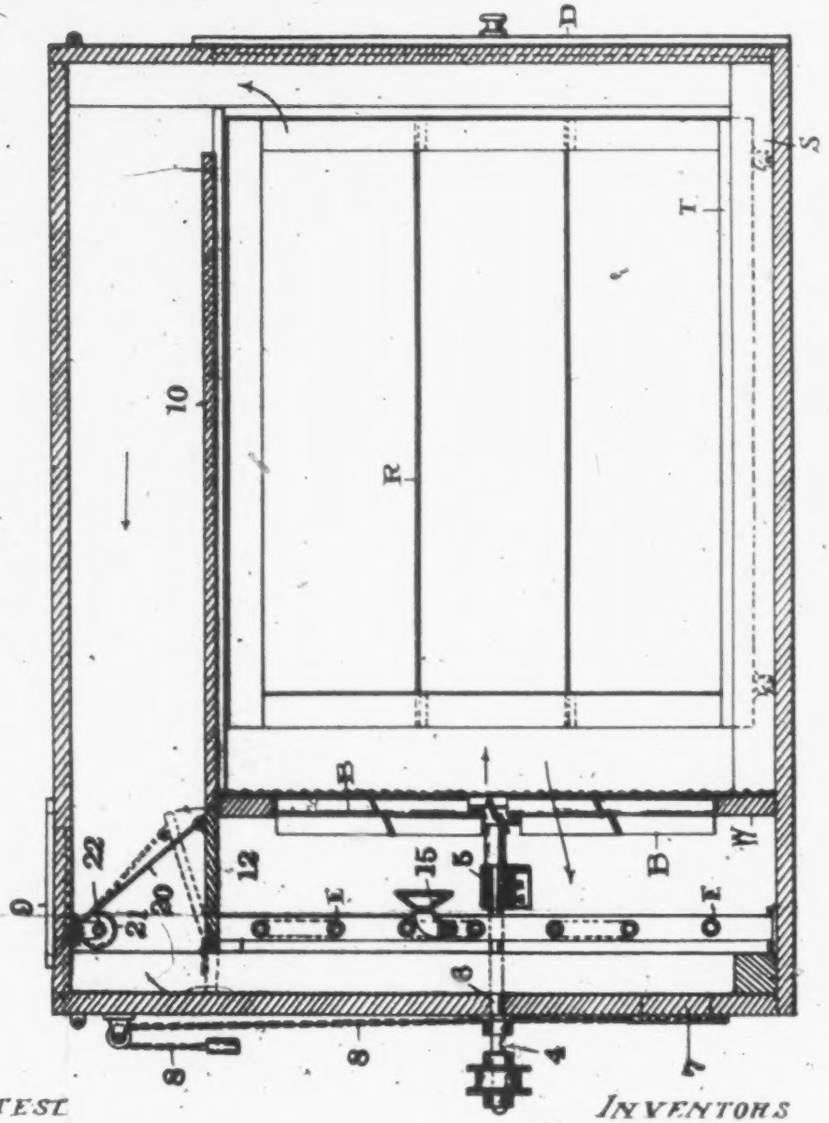


Fig. 2

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H. C. Musaum

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BY Fisher Musser

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APPARATUS FOR DRYING MACARONI AND LIKE BAKERY PRODUCTS.

APPLICATION FILED JUNE 9, 1911.

1,010,809.

Patented Dec. 5, 1911.

5 SHEETS—SHEET 3

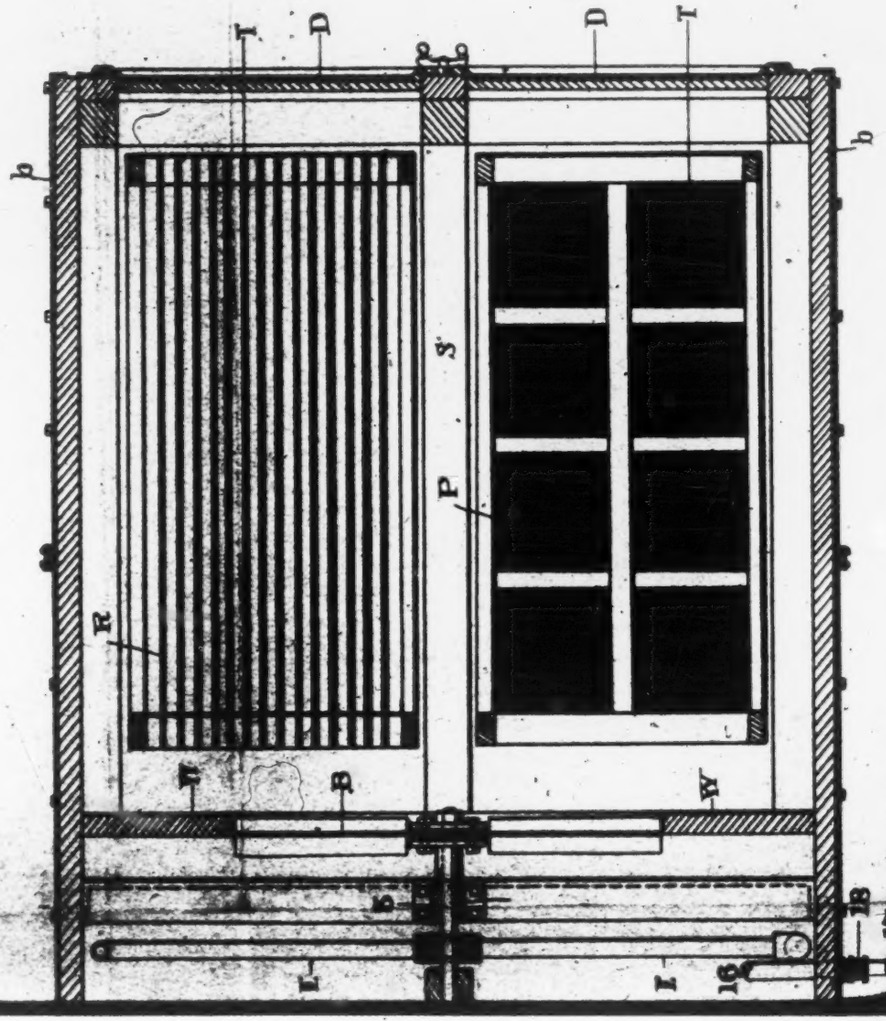
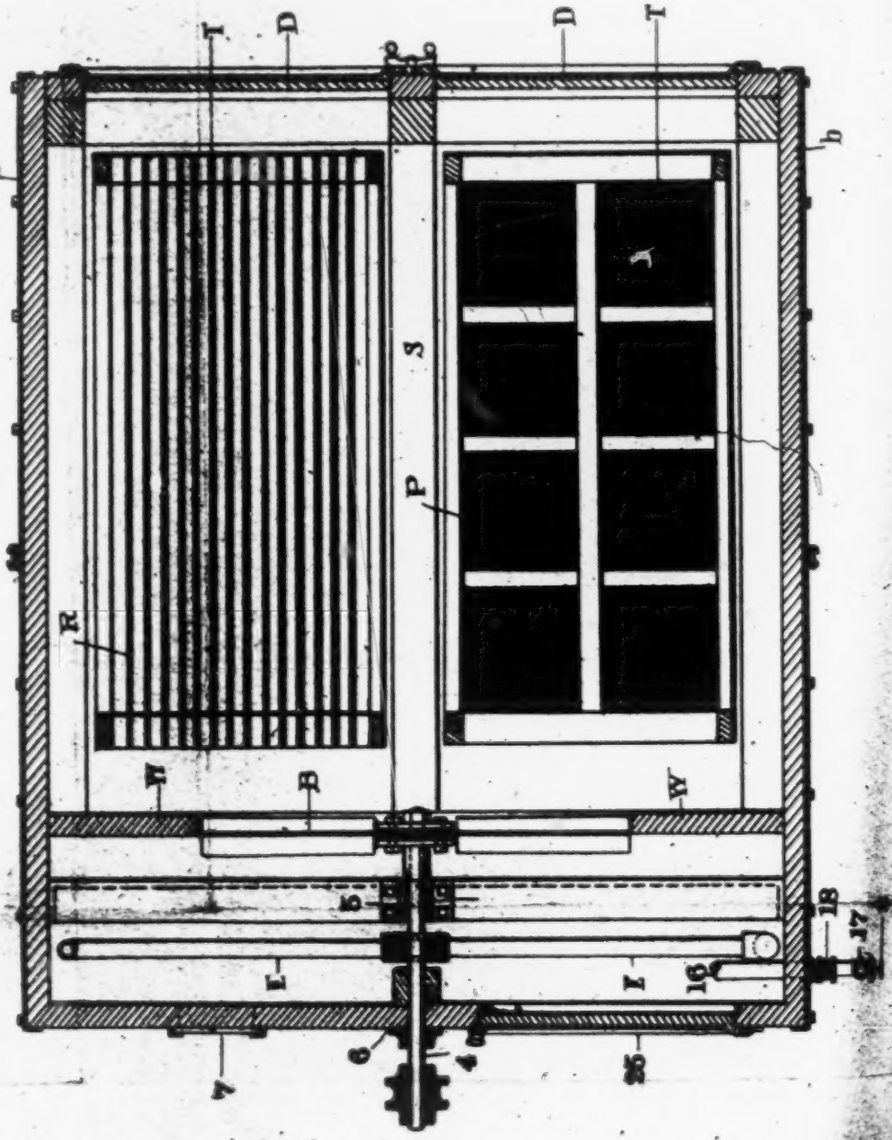


Fig. 3

Fig. 3



ATTEST
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J. C. Musson

INENTORS
JOHN SCHMIDT
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BY Fisher & Moser

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J. SCHMIDT & H. SCHÜTTERLE.

APPARATUS FOR DRYING MACARONI AND LIKE BAKERY PRODUCTS.

APPLICATION FILED JUNE 9, 1911.

1,010,809.

Patented Dec. 5, 1911.

5 SHEETS—SHEET 4

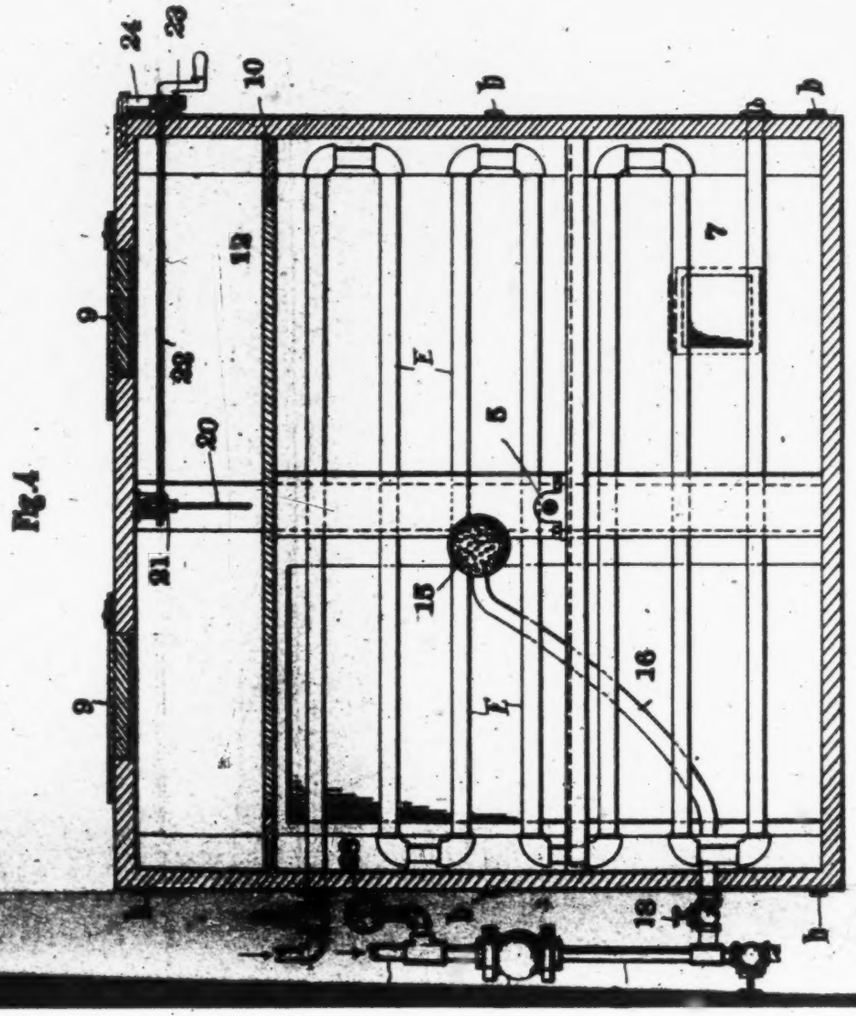
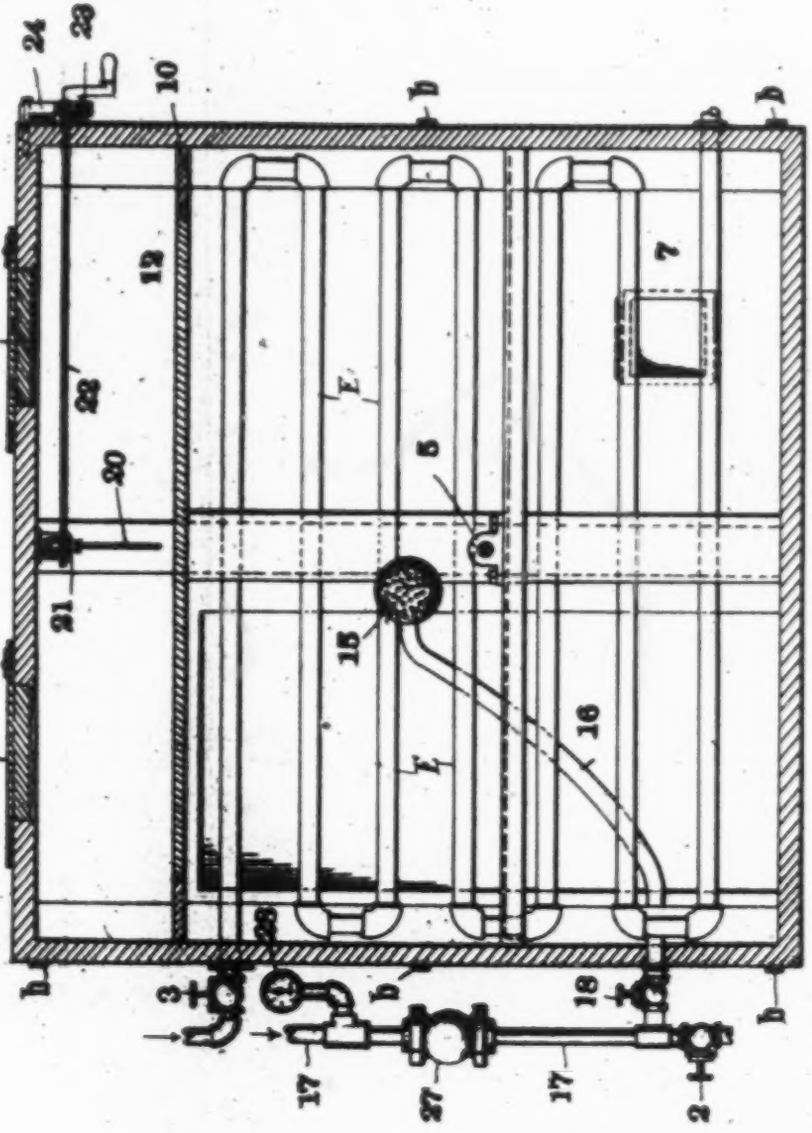


Fig.4

Fig. 4



ATTEST

E. M. Fisher.
J. C. Museum.

INVENTORS
JOHN SCHMIDT
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BY Fisher & Messer ATTYS.

1049

J. SCHMIDT & H. SCHÜTTERLE.

APPARATUS FOR DRYING MACARONI AND LIKE BAKERY PRODUCTS.

APPLICATION FILED JUNE 9, 1911.

1,010,809.

Patented Dec. 5, 1911.

5 SHEETS—SHEET 5.

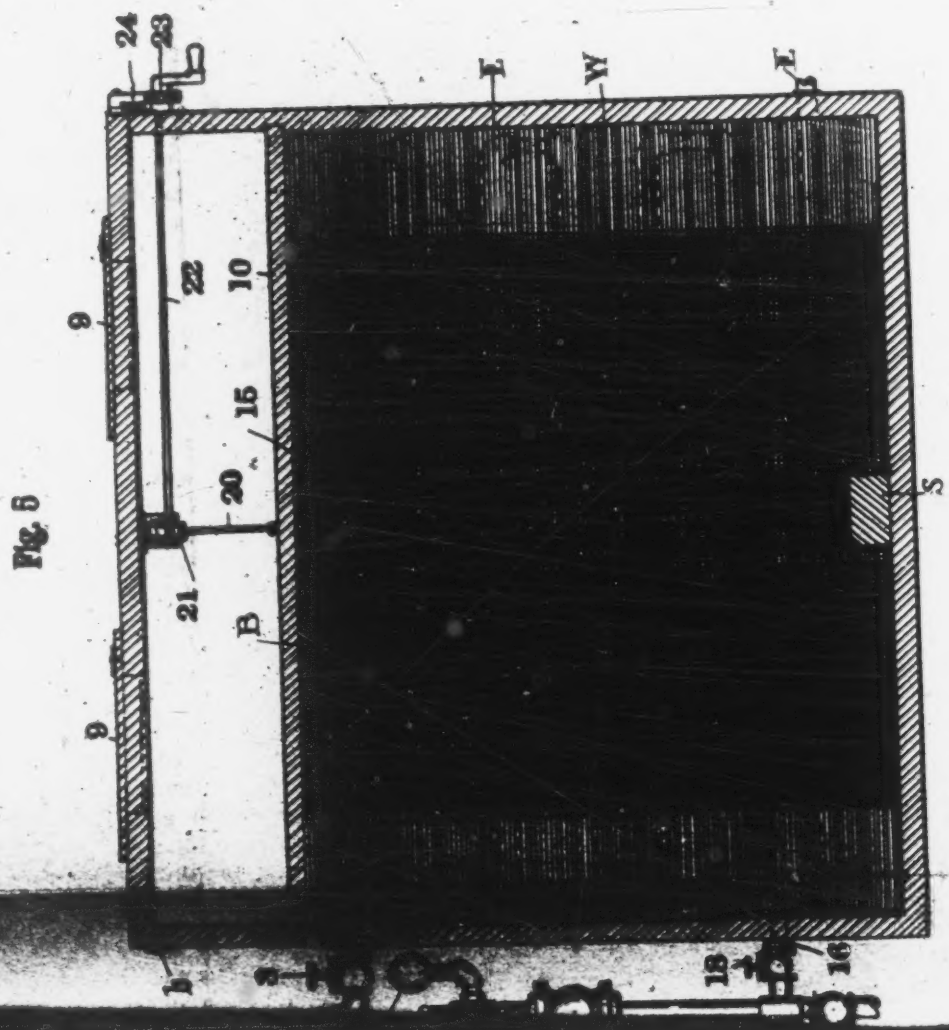

Fig. 5

1,010,809.

5 SHEETS—SHEET 5.

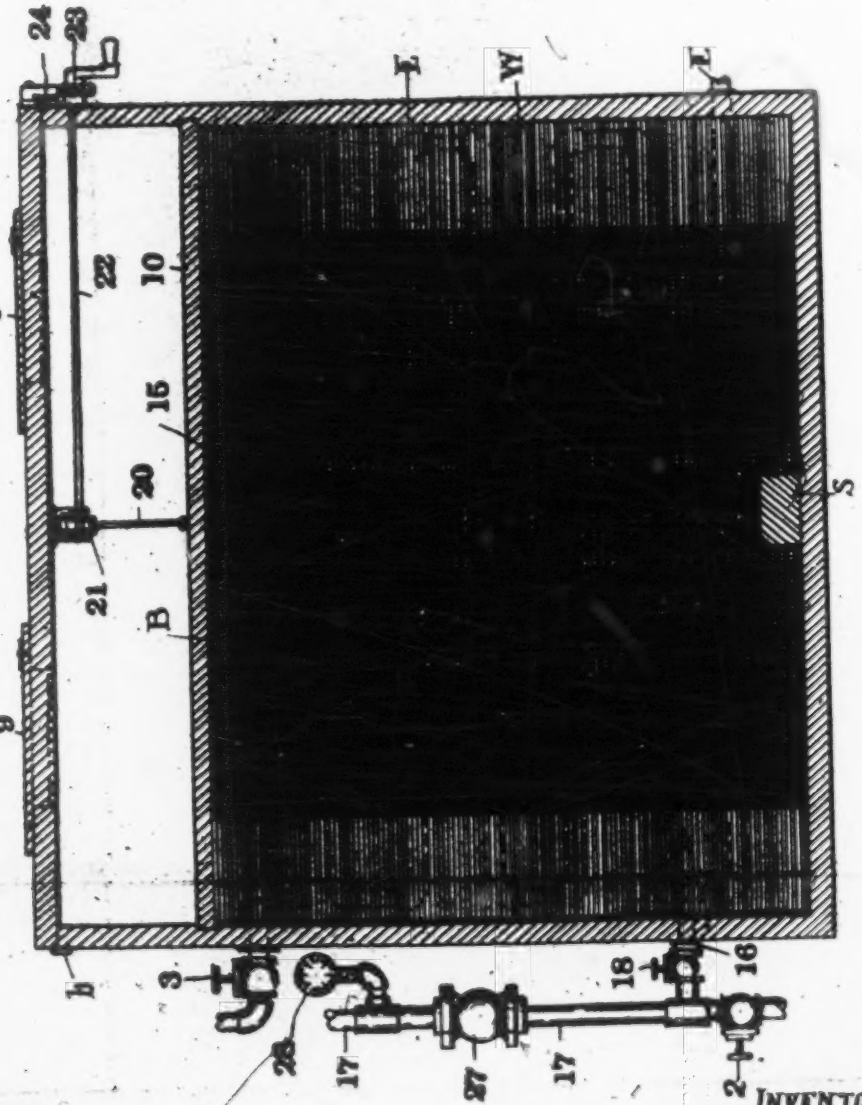

Fig. 5

ATTEST

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F. C. Mussun

INVENTORS

JOHN SCHMIDT

HENRY SCHÜTTERLE

By Fisher & Mussun

Attys.

UNITED STATES PATENT OFFICE.

JOHN SCHMIDT AND HENRY SCHÜTTERLE, OF CHARDON, OHIO.

APPARATUS FOR DRYING MACARONI AND LIKE BAKERY PRODUCTS.

1,010,809. Specification of Letters Patent. Patented Dec. 5, 1911.

Application filed June 9, 1911. Serial No. 632,155.

To all whom it may concern:

Be it known that we, JOHN SCHMIDT and HENRY SCHÜTTERLE, citizens of the United States, residing at Chardon, in the county of Geauga and State of Ohio, have invented certain new and useful Improvements in Apparatus for Drying Macaroni and Like Bakery Products, of which the following is a specification.

This invention has reference to apparatus for drying macaroni and like bakery products, and the invention consists in the construction and combination of parts substantially as shown and described and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of the invention. Fig. 2 is a longitudinal sectional elevation thereof substantially through the center. Fig. 3 is a longitudinal sectional plan view of the invention. Fig. 4 is a cross sectional elevation through the heating chamber, and Fig. 5 is a cross sectional view through the drying chamber showing the blower in the rear.

The apparatus as thus shown is designed especially for drying macaroni, but is not necessarily limited to this single use or product.

As shown the invention comprises an inclosure which is say about nine feet in length by about seven feet in width and about six feet in height, over all, and within this outer wall there are several distinct compartments. In the present views we show straps or bands *b* about the said wall as may be needed to hold the same firmly together, and the interior of the apparatus is variously sub-divided into chambers and compartments as the work to be done may require. Thus, the front and main portion of the apparatus comprises the drying chamber which is divided somewhat arbitrarily into two compartments longitudinally, the base [illegible] of the main frame we find it advantageous to provide a series of racks R upon which the macaroni can be hung or suspended, while for other purposes we may use a series of wire screen pans P. These pans may be arranged in tiers one above the other and adapted to be bodily drawn out and replaced if preferred. Either or both kinds of trucks can be used, or their equivalent, according to kind or nature of stock to be dried. A transverse wall W separates the said compartments for the heater chamber, and the steam coils or pipes E for heating the air for the dried chamber are located in the said heater chamber. Control of the steam flowing through these coils or pipes is by valves 2 and 3, or their equivalent, outside the main wall of the apparatus. A fan or blower B is located in a suitable opening in the wall W, and said blower is driven by shaft 4 from any suitable source of power, said shaft being supported in suitable bearings 5 and 6 and extending through the rear wall of the apparatus for power connections.

Admission of air to the heating chamber and exhaust is by means of suitable doors or dampers disposed here and there as the necessary ventilation may suggest. For example, the bottom rear door 7 may be raised more or less and sustained in raised position by counterweighted chain 8, or its equivalent, and in that case exit or exhaust would be say by door or doors 9 in the top of the apparatus, the circulation of air being through exhaust fan or blower B and through the drier compartments beneath the false top 10. But if for any reason it be desirable to merely circulate the air within the apparatus under increasing heat conditions the respective inlets and outlets will be closed and the door or damper 12 in the top 10 be opened, say about as seen in Fig. 2, more or less. This extends across over the top of the heating chamber, and

Application filed June 9, 1911. Serial No. 632,155.

To all whom it may concern:

Be it known that we, JOHN SCHMIDT and HENRY SCHÜTTERLE, citizens of the United States, residing at Chardon, in the county of Geauga and State of Ohio, have invented certain new and useful Improvements in Apparatus for Drying Macaroni and Like Bakery Products, of which the following is a specification.

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Admission of air to the heating chamber and exhaust is by means of suitable doors or dampers disposed here and there as the necessary ventilation may suggest. For example, the bottom rear door 7 may be raised more or less and sustained in raised position by counterweighted chain 8, or its equivalent, and in that case exit or exhaust would be say by door or doors 9 in the top of the apparatus, the circulation of air being through exhaust fan or blower B and through the drier compartments beneath the false top 10. But if for any reason it be desirable to merely circulate the air within the apparatus under increasing heat conditions the respective inlets and outlets will be closed and the door or damper 12 in the top 10 be opened, say about as seen in Fig. 2, more or less. This extends across over the top of the heating chamber, and with the blower in operation the air will be caused to travel in a circuit through the apparatus and the increasing heat thereof will take care of any further absorbed moisture.

Sometimes it occurs that the condition of the material on the racks or in the pans requires more surface moisture than it possesses inherently, and in such cases we employ a steam spray 15 which more or less saturates the air and meets the requirements. This spraying head is connected by pipe 16 with the main steam supply pipe

17 and is controlled by valve 18. The door 12 is controlled in this instance from the side of the apparatus by a cord 20 over sheave 21 on rod 22 which has a ratchet head 23 outside the main wall and a pawl 24 to engage and hold the same. Entrance to the heating chamber is by door 25, Fig. 3. A steam pressure reducing valve 27 is employed in the steam pipe connection between valves 2 and 3 and a pressure gage 28 is shown in connection with said pipe 17.

What we claim is:

1. An apparatus for drying macaroni having a drying compartment provided with a draft passage front to rear in its top, and a door opening from the outside into the rear of said passage, a heating chamber across the rear of said drying compartment and a door at its top from said passage, a blower between said heating chamber and said compartment and a spraying device in said heating chamber.

2. An apparatus for drying macaroni having drying compartments side by side and a door to enter a truck at the front of each compartment opening down to the floor thereof, a heating chamber and a wall between the same and said compartments and steam heating pipes in said chamber, a blower to force the air from said heating chamber into said drying compartments located in the said wall, a draft passage over said compartments front to rear, a door opening from the discharge end of said passage into said heating chamber, and means in said drying chamber to moisten the air therein.

3. A macaroni drying apparatus comprising a heating chamber and a drying compartment in front thereof and a wall between said chamber and compartment, a rotary blower in said wall adapted to discharge into said compartment, a steam spray in said heating chamber behind said blower and arranged to discharge toward the same, and a steam supply pipe and valves to control the flow of steam to said spray.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN SCHMIDT.
HENRY SCHÜTTERLE.

Witnesses:
MIKE SHULLER,
SAM A. BARBER.

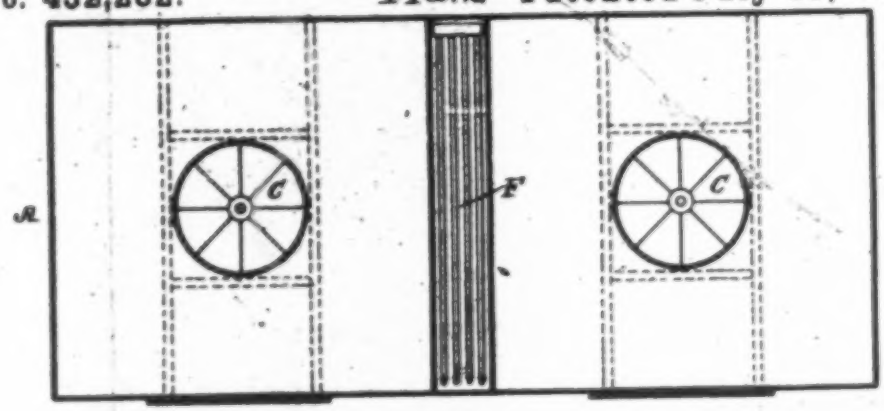
1052

(No Model.)

J. K. PROCTOR & J. H. KNOWLES.

DRYING MACHINE.

No. 432,282. FIG. 2. Patented July 15, 1890.



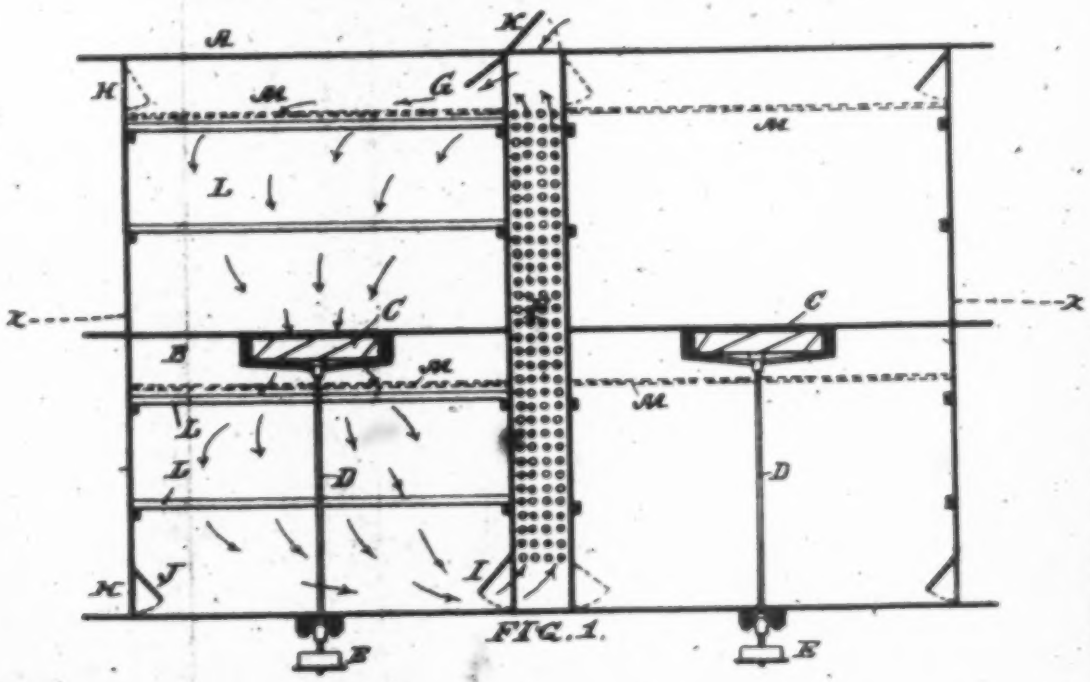


FIG. 1.

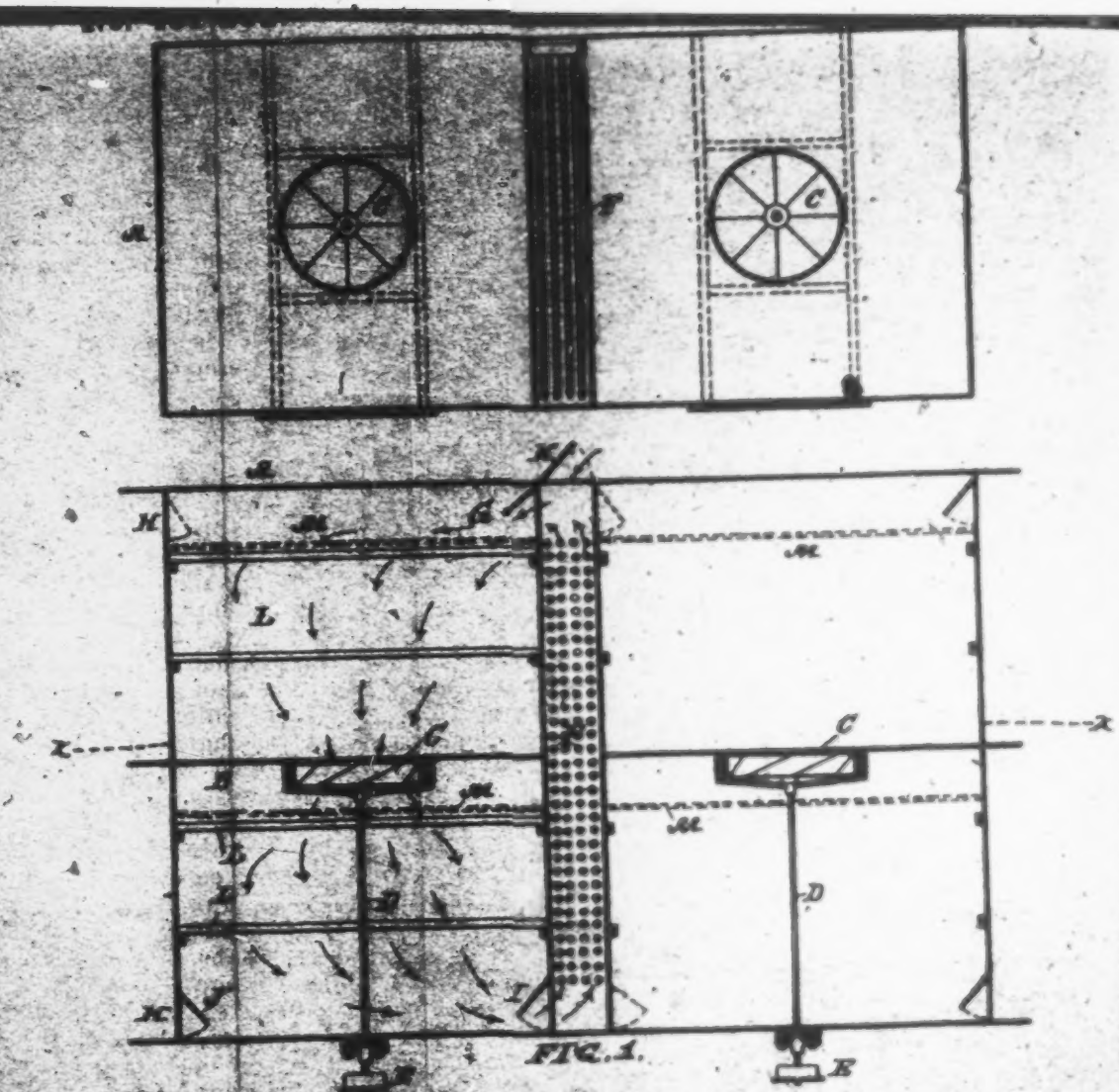


FIG. 1.

WITNESSES:

David Williams

George Drury

INVENTORS:

J. K. PROCTOR

AND

J. H. KNOWLES

by their Atty.

UNITED STATES PATENT OFFICE.

JOSIAH K. PROCTOR AND JOHN HENRY KNOWLES, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE PHILADELPHIA TEXTILE MACHINERY COMPANY, OF SAME PLACE.

DRYING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 439,282, dated July 15, 1890.

Application filed January 19, 1889. Serial No. 296,828. (No model.)

To all whom it may concern:

Be it known that we, JOSIAH K. PROCTOR and JOHN H. KNOWLES, both of the city and county of Philadelphia and State of Pennsylvania, have invented an Improvement in Drying-Machines, of which the following is a specification.

Our invention relates to drying-machines; and it consists of certain improvements, all of which are fully set forth in the following specification, and shown in the accompanying drawings, which form a part thereof.

More particularly this invention relates to that class of drying apparatus in which the air is circulated through or among the material to be dried by means of suitable air-circulating devices. Our apparatus is not confined to the drying of any particular kind of material, but is equally suited to any kind of materials or goods which can be distributed through the drying-room so as to provide numerous vertical air-spaces somewhat evenly distributed.

The object of this invention is to arrange the parts of the drying apparatus (hereinafter for convenience of expression called a "drier") in a novel manner, so that the air used in drying shall be heated outside of the rooms or chambers containing the materials or goods, and then be passed into the rooms and be distributed evenly through and among the material.

In the drawings, Figure 1 represents a longitudinal vertical section of a pair of our improved drying-rooms, and Fig. 2 is a horizontal sectional view of the same on the line [illegible] of Fig. 1.

In all the figures the same letters of reference refer to similar parts, and the arrows show the direction of the air-currents.

erably made to occupy one floor of a building and of a sufficient height for a workman to enter and work comfortably in it.

A is the drying-room divided into upper and lower compartments by the floor B and provided with suitable doors for the entrance of the operators into the chambers. The floor B is provided with an opening or hole, preferably in the center, leading from one compartment to the other.

C is a fan located at the opening in the floor B, preferably immediately below it, for circulating the air. D is the shaft-bearing, and E the pulley, for supporting and driving this fan.

F is the steam-heating coil placed in a separate compartment just outside of the drying-room proper, (which for convenience we will hereinafter term the "heating-chamber.") The drying-room A is provided at its top or upper portion with passages G and H, communicating, respectively, with the heating-chamber F and the external air and at its bottom or lower portion with corresponding passages I and J, also communicating, respectively, with the heating-chamber and external air at the bottom. The heating-chamber F is provided with a passage K, communicating at its top with the air external to the chamber. All of these passages are provided with suitable doors which may be opened or closed, as desired, to regulate the temperature and humidity of the air in the drying-room, as hereinafter set out.

The operation of the machine is as follows: Supposing the material to be dried to be yarn hung upon supports L. The passages J, H, and K are closed and G and I are opened, and by the operation of the fan the air is circulated through the drier and the heating-cham-

DRYING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 432,982, dated July 15, 1890.

Application filed January 10, 1889. Serial No. 296,838. (No model.)

To all whom it may concern:

Be it known that we, JOSIAH K. PROCTOR and JOHN H. KNOWLES, both of the city and county of Philadelphia and State of Pennsylvania, have invented an Improvement in Drying-Machines, of which the following is a specification.

Our invention relates to drying-machines; and it consists of certain improvements, all of which are fully set forth in the following specification, and shown in the accompanying drawings, which form a part thereof.

More particularly this invention relates to that class of drying apparatus in which the air is circulated through or among the material to be dried by means of suitable air-circulating devices. Our apparatus is not confined to the drying of any particular kind of material, but is equally suited to any kind of materials or goods which can be distributed through the drying-room so as to provide numerous vertical air-spaces somewhat evenly distributed.

The object of this invention is to arrange the parts of the drying apparatus (hereinafter for convenience of expression called a "drier") in a novel manner, so that the air used in drying shall be heated outside of the rooms or chambers containing the materials or goods, and then be passed into the rooms and be distributed evenly through and among the material.

In the drawings, Figure 1 represents a longitudinal vertical section of a pair of our improved drying-rooms, and Fig. 2 is a horizontal sectional view of the same on the line x x of Fig. 1.

In all the figures the same letters of reference refer to similar parts, and the arrows show the direction of the air-currents.

Although the drawings show two driers side by side, we will first proceed with our description as if there were but one drier, since each is like the other in construction, and afterward speak of the relation which the two have to each other. Each drier is composed of two rooms or chambers—an upper and a lower chamber—each entirely separate from the other, except as hereinafter described, and each of these chambers is preferably made to occupy one floor of a building and of a sufficient height for a workman to enter and work comfortably in it.

A is the drying-room divided into upper and lower compartments by the floor B and provided with suitable doors for the entrance of the operators into the chambers. The floor B is provided with an opening or hole, preferably in the center, leading from one compartment to the other.

C is a fan located at the opening in the floor B, preferably immediately below it, for circulating the air. D is the shaft-bearing, and E the pulley, for supporting and driving this fan.

F is the steam-heating coil placed in a separate compartment just outside of the drying-room proper, (which for convenience we will hereinafter term the "heating-chamber.") The drying-room A is provided at its top or upper portion with passages G and H, communicating, respectively, with the heating-chamber F and the external air and at its bottom or lower portion with corresponding passages I and J, also communicating, respectively, with the heating-chamber and external air at the bottom. The heating-chamber F is provided with a passage K, communicating at its top with the air external to the chamber. All of these passages are provided with suitable doors which may be opened or closed, as desired, to regulate the temperature and humidity of the air in the drying-room, as hereinafter set out.

The operation of the machine is as follows: Supposing the material to be dried to be yarn hung upon supports L. The passages J, H, and K are closed and G and I are opened, and by the operation of the fan the air is circulated through the drier and the heating-chamber F. When the air is thus recirculated, it will become highly heated by constantly passing through the heating-chamber and very moist by absorbing the moisture from the material through which it passes in the drier, and when it has become sufficiently heated or sufficiently moist the passage J is opened to allow the damp and hot air to escape from the drier, and the passage K over the heater is opened to admit a supply of fresh cold air

to the drier. It is a great advantage to have the fresh air enter the drying-room by the passage K over the heating-chamber, as the dry and cool air is thus at once intermingled with the hot air arising from the heater, and the air entering through the passage G into the drier will be of one even temperature; but where it is not practical to have this opening K over the heater any other opening into the top of the drier may be used for this purpose—as, for instance, that at H. When the drying process is completed and it is desired to rapidly reduce the temperature in the drier, so that a workman may enter for the purpose of recharging the drier, the passages G and I, leading to the heating-chamber, are closed, and the passages H and J, leading to the external air, are fully opened. Cold air rushes in at H and is discharged at J, rendering the temperature within the drier comfortable to work in. If desired, during the whole process of taking the goods out and recharging the drier the fan C may be kept running, (preferably at a slower speed than usual,) so as to produce a grateful temperature to work in. In summer-time such a circulation of air during the recharging process is exceedingly pleasant and desirable. In drying other material than yarn some manipulation of the doors over the passages other than that described may be required for the goods in hand; but it will be seen that these doors may be regulated and adjusted to produce and maintain any required temperature or degree of humidity in the drier. In some cases the doors over the passages may be dispensed with, and a continued and uniform discharge of air may be maintained, and when heated air is not desired, or where heat may injure the goods, the heater F may be dispensed with and cold air only circulated through the driers. If desired, for the purpose of dividing and evenly distributing the air through the drier perforated barriers or partitions M may be placed across the chambers as indicated in dotted lines in Fig. 1.

In the drawings we have shown two driers adjoining one another with a common heating-chamber and a single heater between them. While each drier may have its own independent heater without regard to any [illegible] to be done it is an economical arrangement to place the driers as shown. When the two driers are placed side by side, as shown, we prefer to operate them alternately, using the heater first for the one and then for the other. The doors over the passages leading from the driers to the heating-chamber are alternately opened and closed, so that first one and then the other drier shall be connected with the common heating-chamber. During the time one drier is in operation the other drier may be recharged. Thus the steam is never shut off from the heater while the driers are in operation; but the heater is in constant use, first for one and then for the other drier, avoiding a loss of heat, which could not be prevented were the heater-rooms inoperative during the recharging process.

Instead of a fan—such as shown in the drawings—for moving the air, any other suitable air-moving device may be employed; and we do not limit ourselves to the mere details of construction here shown, as it is apparent that they may be varied in many ways without departing in the least from the principles of our invention.

Having now described our invention, what we claim as new, and desire to secure by Letters Patent, is—

In a drier, the combination of the following elements: a floor or partition dividing the drier into upper and lower compartments or rooms, the said floor or partition being provided with an opening forming a vertically-communicating passage-way between the rooms and being closed or air-tight except as to said opening, an air-circulating fan located in said opening for sucking air through one compartment and forcing it through the other, an external passage-way connecting the upper and lower compartments, heating pipes in said external passage-way, an adjustable door between each of said compartments and said external passage-way, and an adjustable door in each compartment between the external atmosphere and the compartment, so arranged that cold air may be drawn into the upper and discharged from the lower compartment without passing through the passage-way containing the heating-pipes, all as and for the purposes described.

In testimony of which invention we hereunto set our hands.

JOSIAH K. PROCTOR.
JOHN HENRY KNOWLES.

Witnesses:
SAMUEL W. THACKRUB,
WALTER A. KREIDER.

1055

D. W. SHARES.

Cultivator.

No, 11,460. Patented Aug. 1, 1854.

Fig. 1.

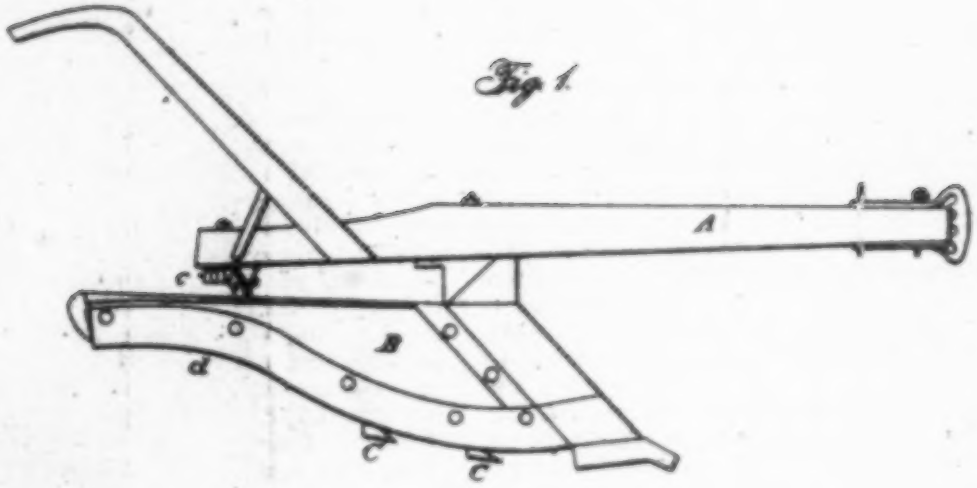


Fig. 2.

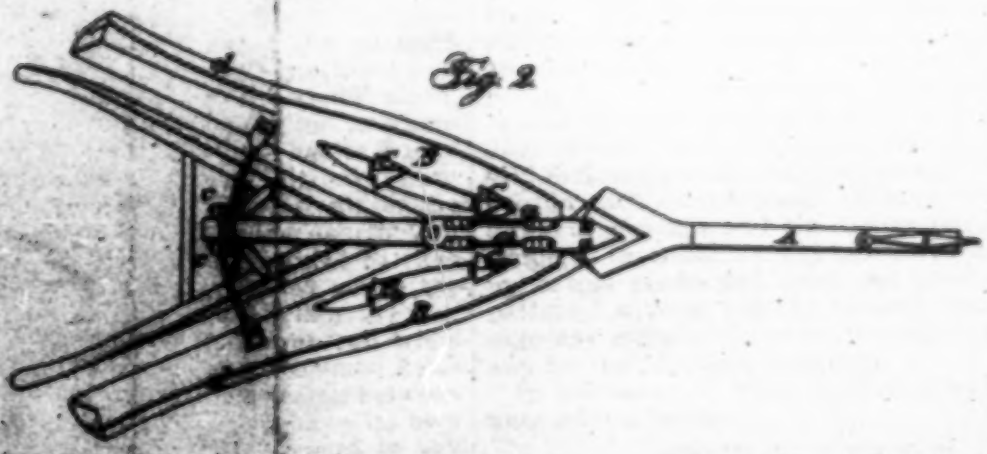


Fig. 3

No. 11,460. Patented Aug. 1, 1854.

Fig. 1.

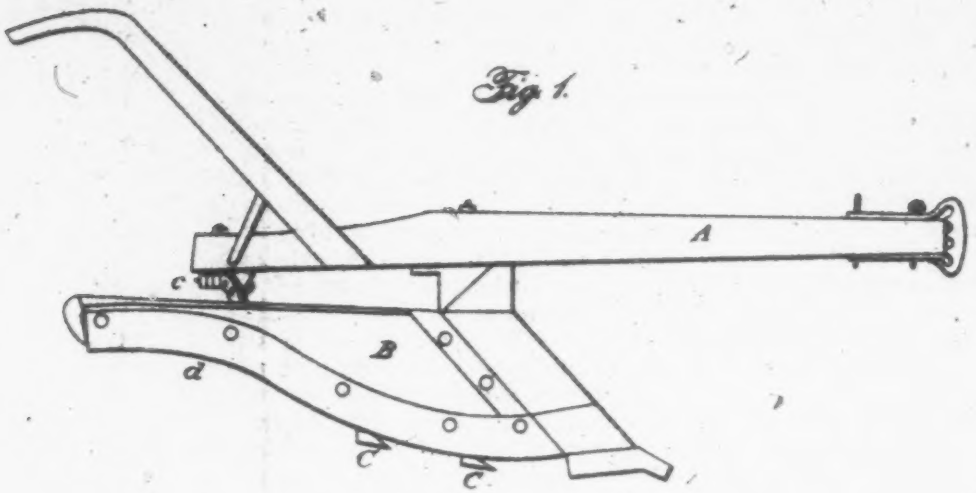


Fig. 2.

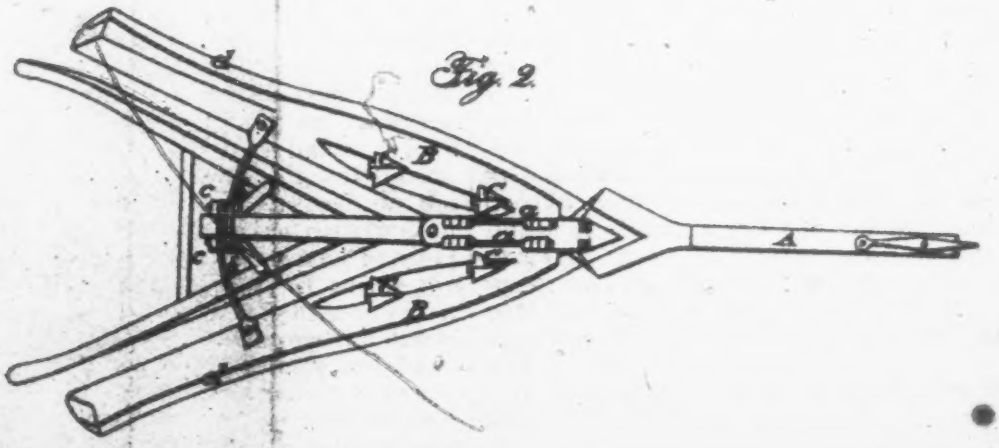
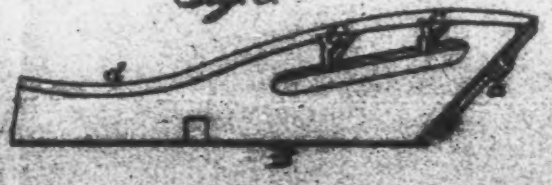


Fig. 3.



UNITED STATES PATENT OFFICE.

DANIEL W. SHARES, OF HAMDEN, CONNECTICUT.

IMPROVEMENT IN CULTIVATORS.

Specification forming part of Letters Patent No. 11,460, dated August 1, 1854.

To all whom it may concern:

Be it known that I, DANIEL W. SHARES, of Hamden, in the county of New Haven and State of Connecticut, have invented a certain new and useful Improvement in Hoeing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form part of this specification, and in which—

Figure 1 represents a side view of my improved machine; Fig. 2, an inverted plan or under view, and Fig. 3 an inside view of one of the wings or scrapers detached.

The machine represented in the accompanying drawings is of plow form or build, and is designed to be used in hoeing corn, potatoes, or other vegetable produce growing in hills or rows. It is drawn by horse or cattle in front, and guided or held by hand behind, as in operating the ordinary plow, the horse being hitched to the draft-bar A and walking in between the hills or rows. Thus operating, the hoeing is effected by wings or scrapers B, one on either side, diverging or spreading outward, backwardly, and set inclined or beveled on their outside faces, so as to present greater width or distance apart between their bottom than their top edges. These wings are hinged at their front ends by hinges *a*, for the purpose of contracting and expanding them at pleasure, to suit different widths of furrows or distances apart of the rows or hills, screw-bolts *c* or pins passing through bars *b* at the back, provided with suitable perforations, and lapping one over the other, serving to hold the wings apart when set. This arrangement of expanding and contracting wings is common to corn-plows having wings of either [illegible]

is commonly done in hoeing them by hand after the travel of the ordinary plow or cultivator between them, the entire bottom or scraping edge of each wing being of corresponding configuration to the transverse section of one-half (nearly) of the row and its furrow, and thus the two wings combined shape the furrow and one-half of each row on either side, the return or run of the machine along the adjoining furrows serving to hoe the opposite sides of the rows and simultaneously to hoe the one side of an adjoining row and shape the furrow as before. If the plant be in hills instead of rows, the wings similarly act in shaping them by running the machine breadthwise as well as lengthwise or diagonally, as may be, of the field between the hills. Thus the machine not only loosens the earth by its plow form in front, but carries or shoves the earth onto the rows or around the hills, leaving the *hills or rows of the proper shape*, answering most effectually the purpose of a hoe, as the narrow crooked form of the hinder extremity of the wings will work under the leaves of the plant lying on or near the ground instead of covering them with soil, as is the case with the common plow or cultivator, all after hand-hoeing being dispensed with. The flat shape given to the hill or row at the top by the crook in the hinder extremity of the wing will serve to make the hill or row preserve its form better than if a sharp incline or angle were left, as in the case with the common plow or cultivator.

To prevent the furrow being made or left too [illegible] by the wings or scrapers in passing along the furrow by the weight of the machine thereon or on, which is more particularly [illegible] to be the case in wet land, I attach

IMPROVEMENT IN CULTIVATORS.

Specification forming part of Letters Patent No. 11,469, dated August 1, 1854.

To all whom it may concern:

Be it known that I, DANIEL W. SHARES, of Hamden, in the county of New Haven and State of Connecticut, have invented a certain new and useful Improvement in Hoeing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form part of this specification, and in which—

Figure 1 represents a side view of my improved machine; Fig. 2, an inverted plan or under view, and Fig. 3 an inside view of one of the wings or scrapers detached.

The machine represented in the accompanying drawings is of plow form or build, and is designed to be used in hoeing corn, potatoes, or other vegetable produce growing in hills or rows. It is drawn by horse or cattle in front, and guided or held by hand behind, as in operating the ordinary plow, the horse being hitched to the draft-bar A and walking in between the hills or rows. Thus operating, the hoeing is effected by wings or scrapers B, one on either side, diverging or spreading outward, backwardly, and set inclined or beveled on their outside faces, so as to present greater width or distance apart between their bottom than their top edges. These wings are hinged at their front ends by hinges *a*, for the purpose of contracting and expanding them at pleasure, to suit different widths of furrows or distances apart of the rows or hills, screw-bolts *c* or pins passing through bars *b* at the back, provided with suitable perforations, and lapping one over the other, serving to hold the wings apart when set. This arrangement of expanding and contracting wings is common to corn-plows having wings on either side, as with mine, but of different shape and for a different purpose. In the machine represented in the drawings the wings B are made much deeper at their front than their back ends, the latter having a crook or hollow, *d*, along or in its bottom edge, and gradually blending into a convex figure, which is the shape of the forward part of the bottom edge of the wing, the forward portion of the wing descending into the furrow, and serving, by its convex form, to shape it, while the crook at the back end, by its higher elevation and shape, fairs or forms the rows or hills of the proper shape at the top, leaving, as the machine is drawn along, the hills or rows as perfectly finished as is commonly done in hoeing them by hand after the travel of the ordinary plow or cultivator between them, the entire bottom or scraping edge of each wing being of corresponding configuration to the transverse section of one-half (nearly) of the row and its furrow, and thus the two wings combined shape the furrow and one-half of each row on either side, the return or run of the machine along the adjoining furrows serving to hoe the opposite sides of the rows and simultaneously to hoe the one side of an adjoining row and shape the furrow as before. If the plant be in hills instead of rows, the wings similarly act in shaping them by running the machine breadthwise as well as lengthwise or diagonally, as may be, of the field between the hills. Thus the machine not only loosens the earth by its plow form in front, but carries or shoves the earth onto the rows or around the hills, leaving the hills or rows of the proper shape, answering most effectually the purpose of a hoe, as the narrow crooked form of the hinder extremity of the wings will work under the leaves of the plant lying on or near the ground instead of covering them with soil, as is the case with the common plow or cultivator, all after hand-hoeing being dispensed with. The flat shape given to the hill or row at the top by the crook in the hinder extremity of the wing will serve to make the hill or row preserve its form better than if a sharp incline or angle were left, as is the case with the common plow or cultivator.

To prevent the furrow being made or left too hard by the wings or scrapers in passing along the furrow by the weight of the machine thrown therein or on, which is more particularly apt to be the case in wet land, I attach cultivator-teeth C on the inside of the expanding wings. These teeth may be of the ordinary cultivator form, or they may be of any other suitable shape and be arranged in pairs on either wing, one tooth in advance of the other, and the back teeth of the two wings farther apart than the forward ones, as represented in the drawings, or two teeth, one to either wing, alone may be used; or a series of teeth, as desired. These cultivator-teeth may either be fastened permanently to the wings, projecting downward on their inside to or below the lower edges of the wings or scrapers, or they may be fast to a loose timber or plate

secured at pleasure to the wings for the convenience of detaching them when their use is not requisite, or be otherwise secured to the wings. The use of them is, as before specified, to prevent the furrow being made too hard by the travel of the machine in it, by breaking up and loosening the top-hardened surface, the teeth not penetrating deep or destroying the shape of the hill or row. The benefit of thus loosening the soil is well known, and by the disposition of the teeth on the expanding and contracting wings, as specified, it will be obvious that whatever the width of the furrow or distance of the rows or hills apart this breaking and loosening of the soil will always be made at or near the foot of the hills or rows and in the furrows, thus opening the soil where it is best for the roots of the plants.

I do not claim of themselves the expanding and contracting wings, as such have before been used in corn-plows and cotton-scrapers; but

I do claim as new and useful and desire to secure by Letters Patent—

Providing the expanding and contracting hoeing-wings B on either side with cultivator-teeth C, projecting downward on the inside of the hoeing wings or scrapers, as and for the purposes specified.

In testimony whereof I have hereunto subscribed my name.

DANIEL W. SHARES.

Witnesses:
SIDNEY S. BENHAM,
CLEORA GILBERT.

1058

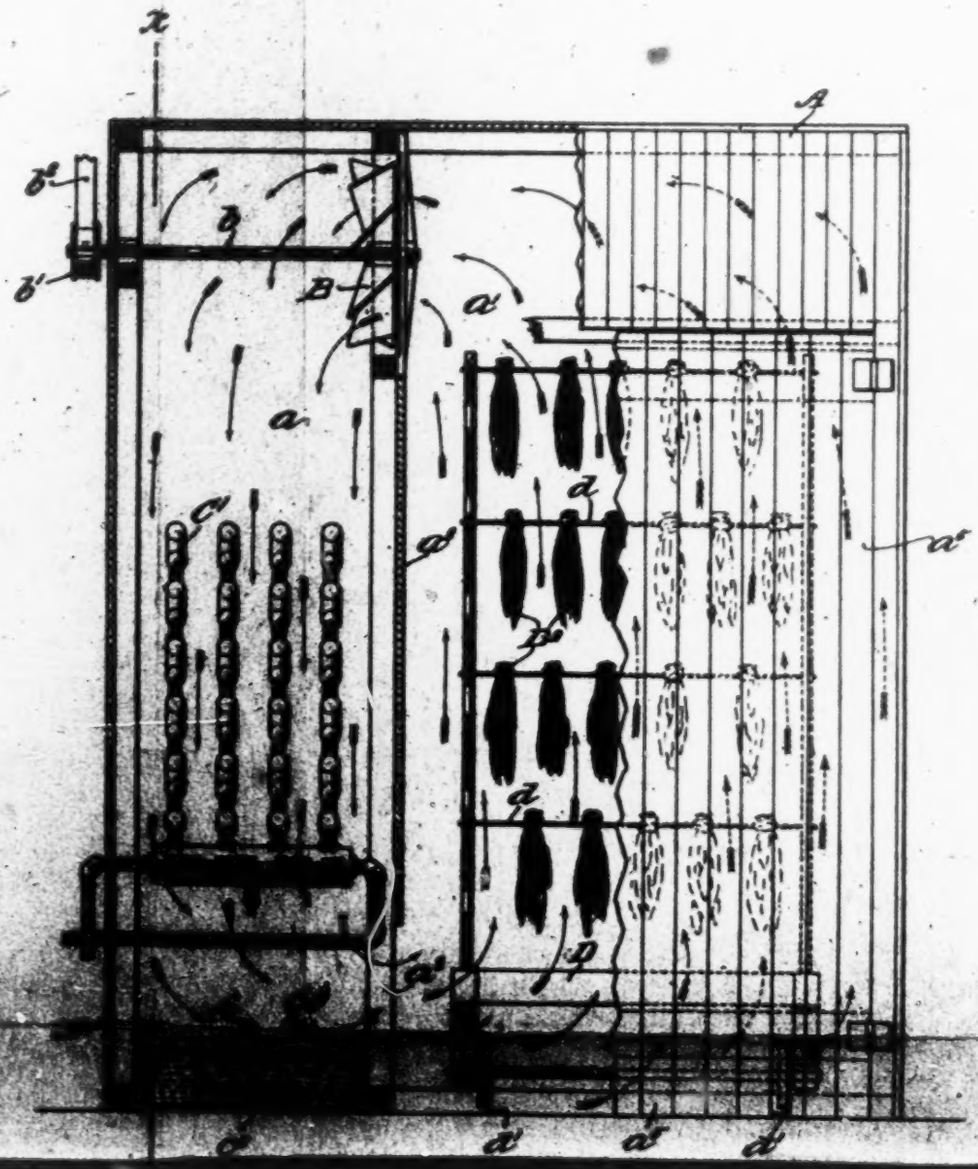
(No Model.) 6 Sheets—Sheet 1.

C. W. SCHWARTZ, Jr.

METHOD OF AND APPARATUS FOR ORDERING TOBACCO.

No. 535,175. Patented Mar. 5, 1895.

Fig: 1


x
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B
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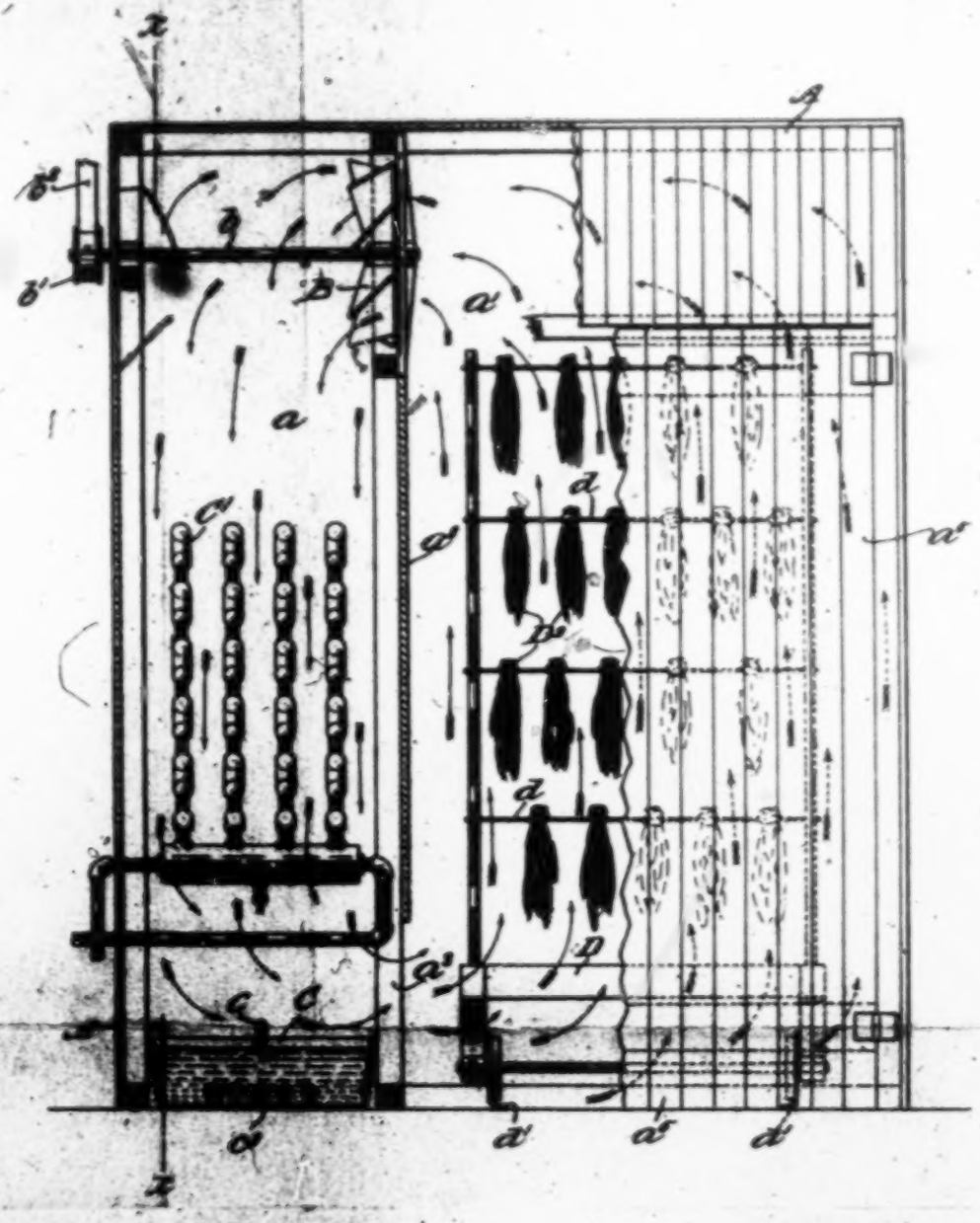
a'
a'

Fig: 1



Witnesses:
Thomas M. Smith,
Richard C. Mizell.

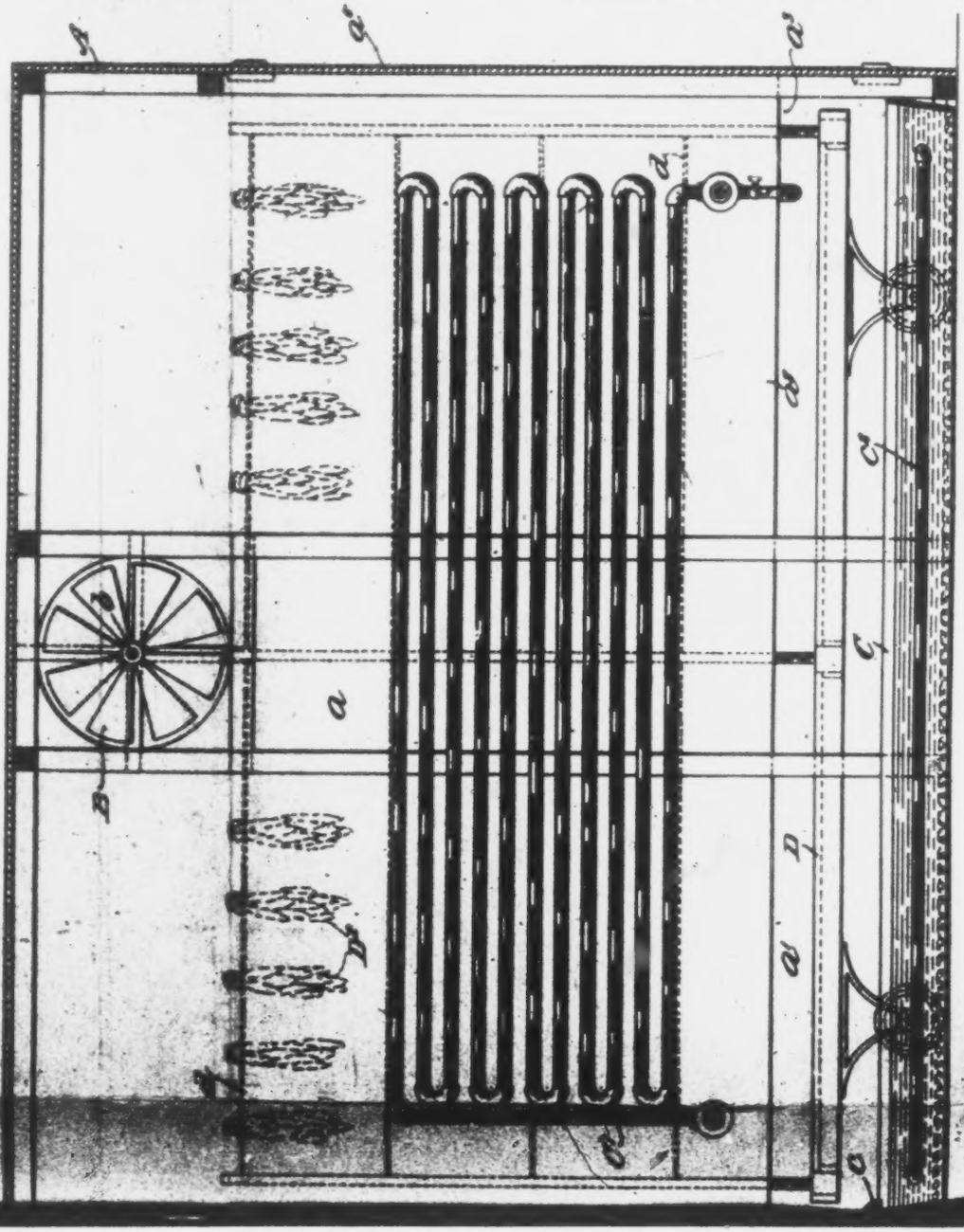
Inventor.
Charles H. Schwartz Jr.
By J. Walter Douglas
Attorney.

(No Model.) 6 Sheets—Sheet 2.

C. W. SCHWARTZ, Jr.

METHOD OF AND APPARATUS FOR ORDERING TOBACCO.

No. 535,175. Patented Mar. 5, 1895.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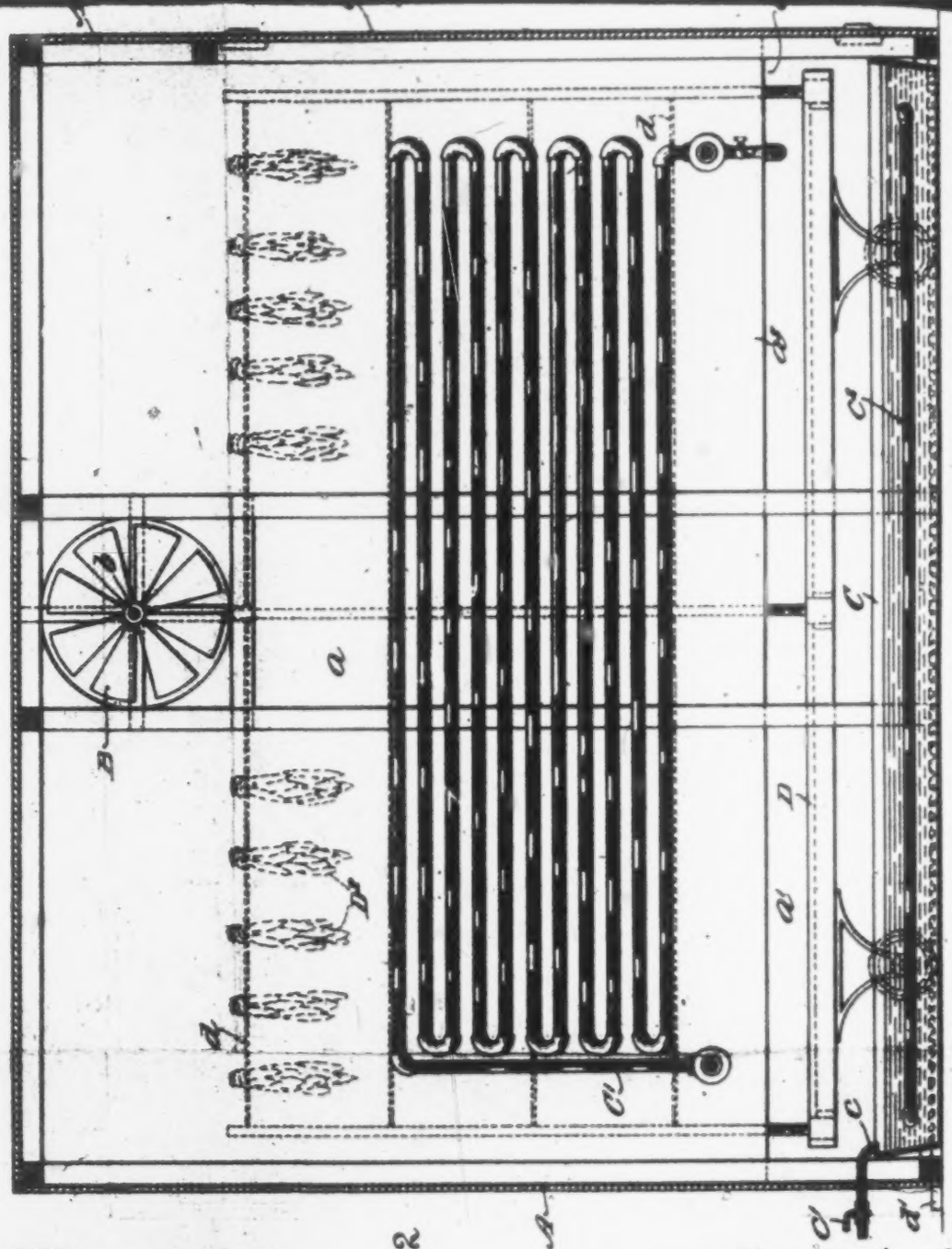
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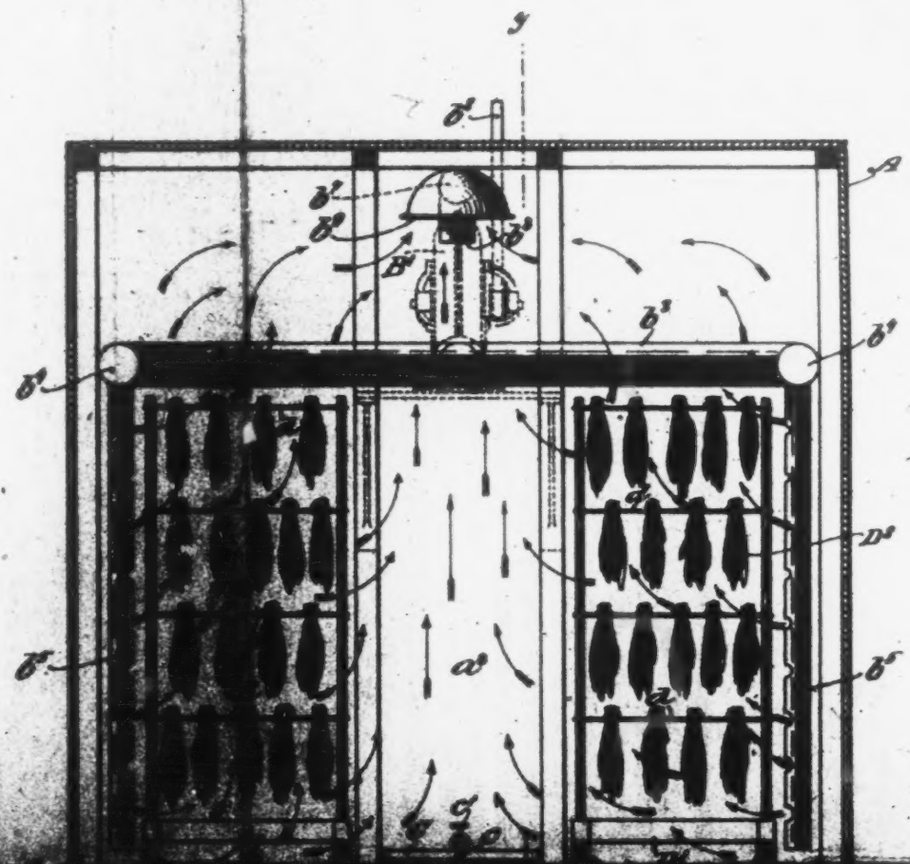
(No Model.) 6 Sheets—Sheet 3.

C. W. SCHWARTZ, Jr.

METHOD OF AND APPARATUS FOR ORDERING TOBACCO.

No. 535,175. Patented Mar. 5, 1895.

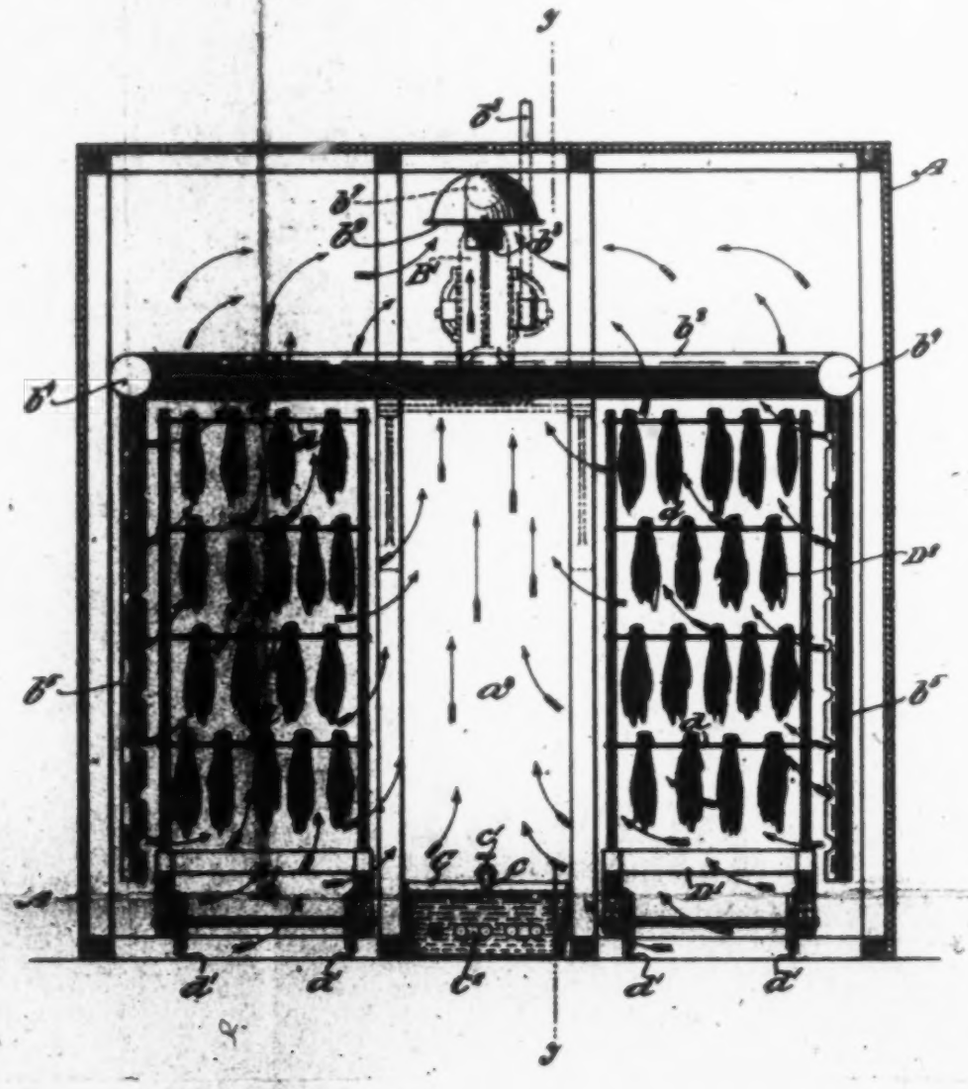
Fig: 3



METHOD OF AND APPARATUS FOR ORDERING TOBACCO.

No. 535,175. Patented Mar. 5, 1895.

Fig. 3



Witnesses:
Thomas M. Smith
Richard C. Maxwell

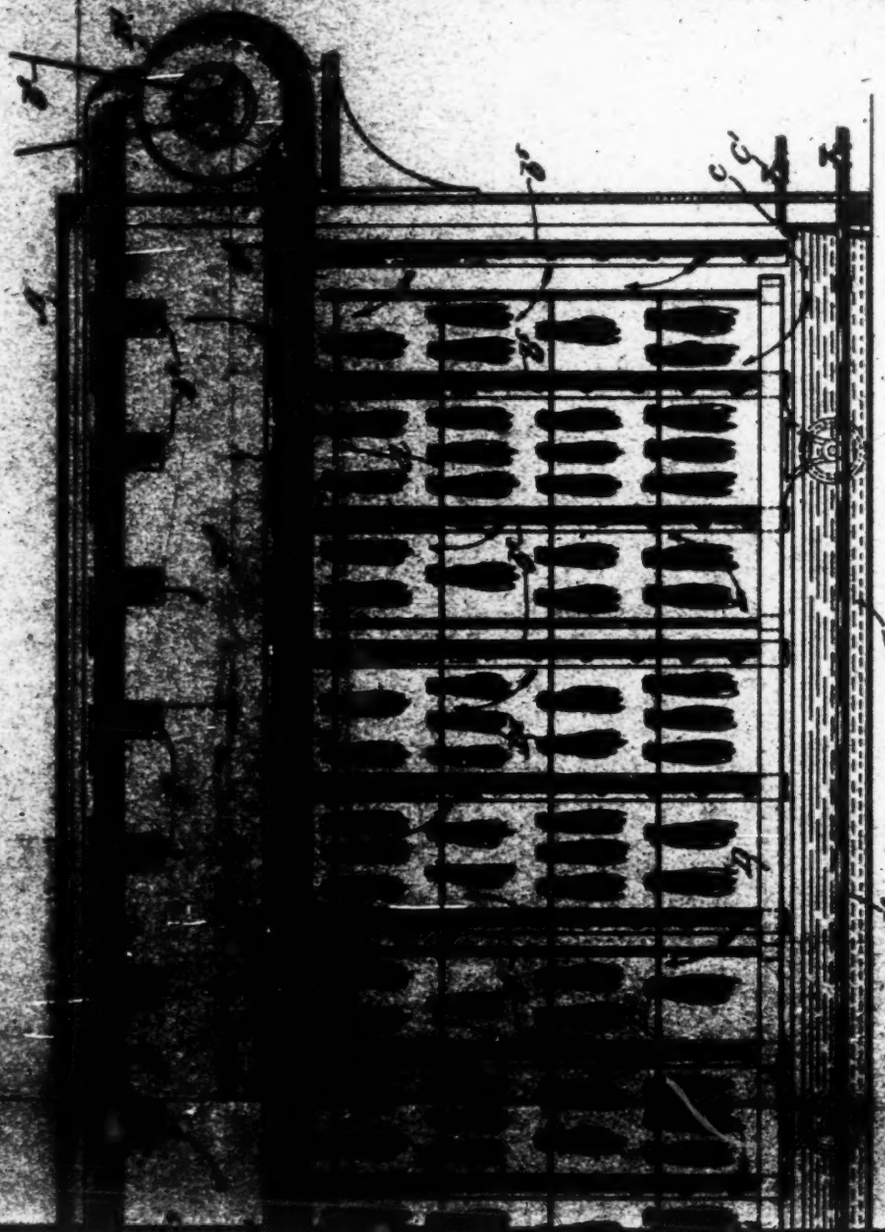
Inventor:
Charles H. Schwartz Jr.
By J. Walter Douglass
Attorney.

(No Model.) 6 Sheets—Sheet 4.

C. W. SCHWARTZ, Jr.

METHOD OF AND APPARATUS FOR ORDERING TOBACCO.

No. 535,175. Patented Mar. 5, 1895.



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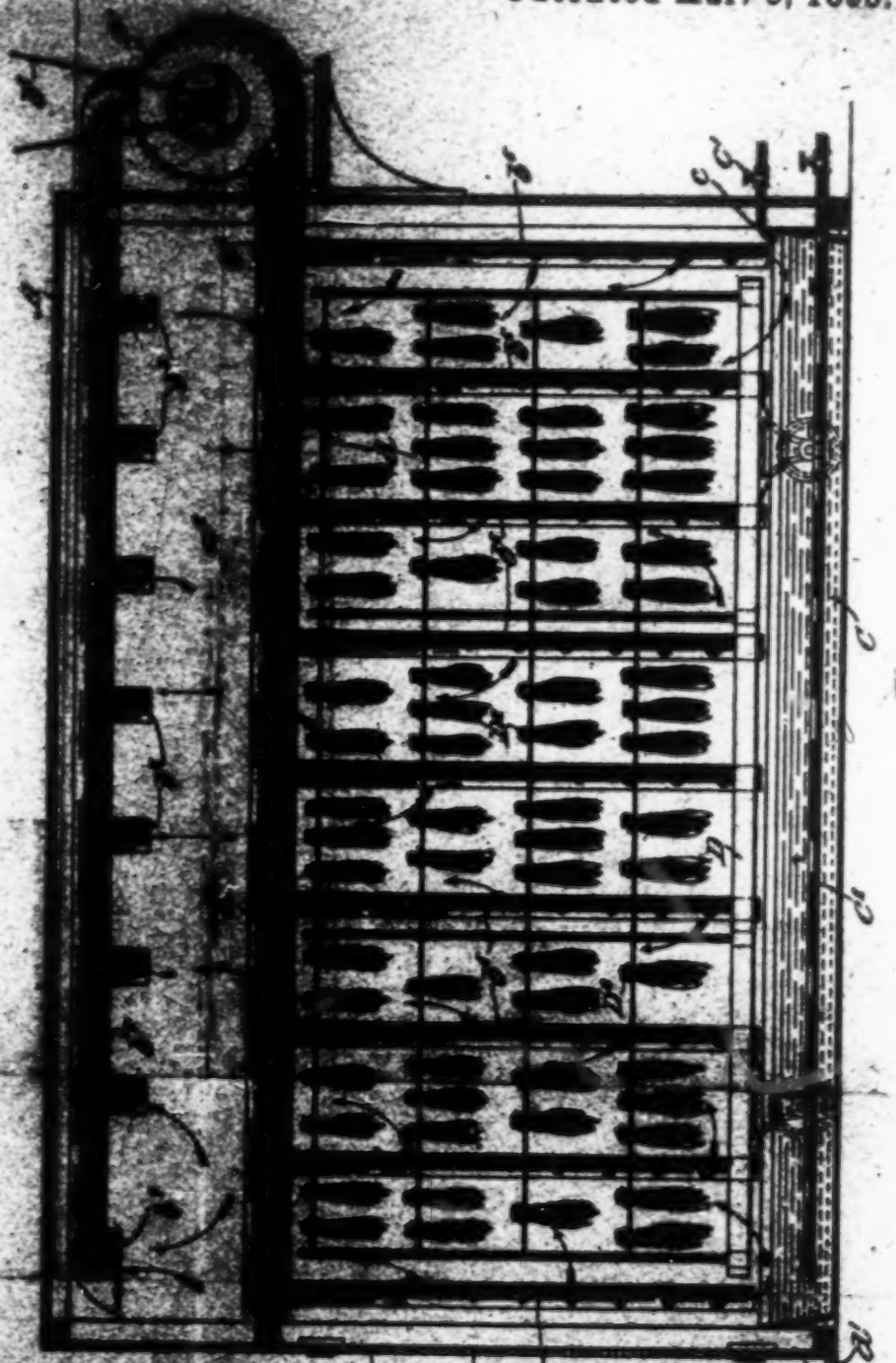


Witnesses
Thomas M. Smith
Richard C. Mount

Inventor
Charles W. Schwartz Jr.
By J. Walter Douglass
Attorney

1062

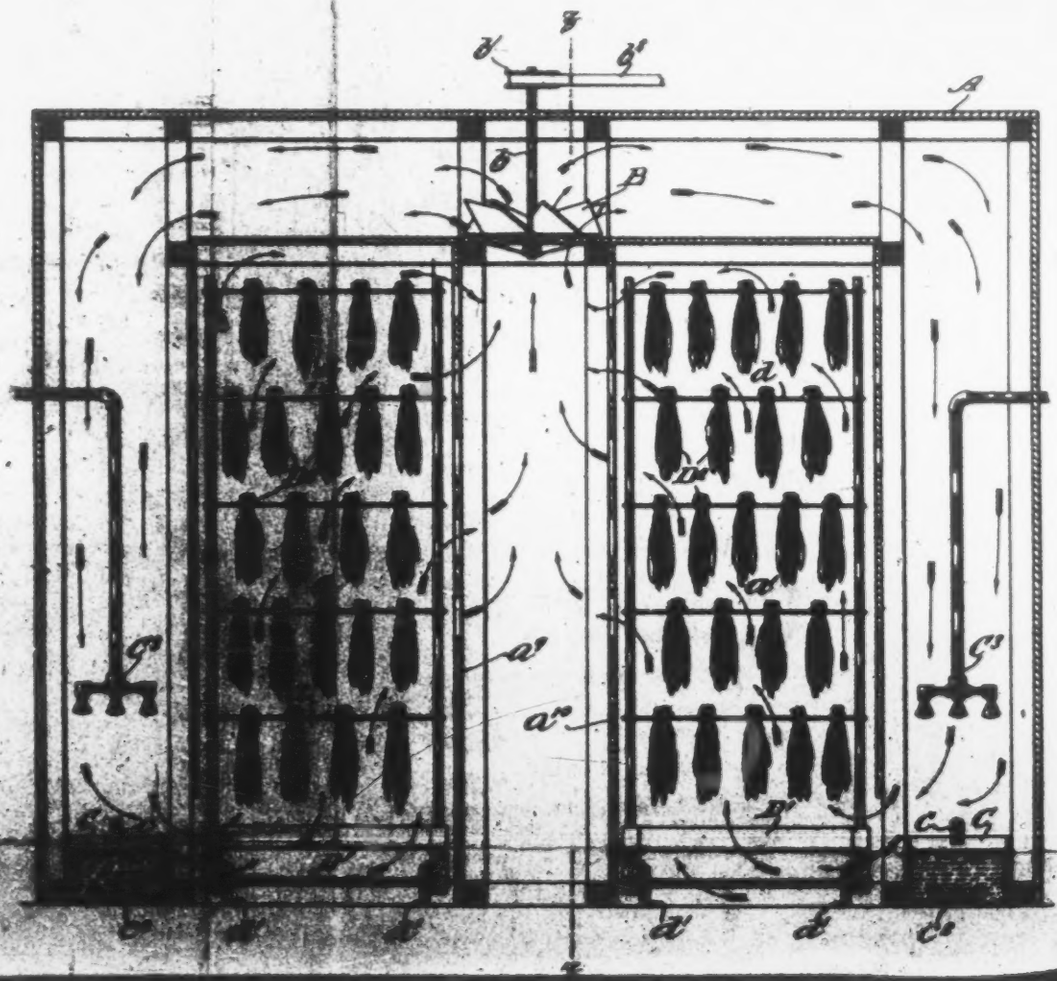
(No Model.) 6 Sheets—Sheet 5.

C. W. SCHWARTZ, Jr.

METHOD OF AND APPARATUS FOR ORDERING TOBACCO.

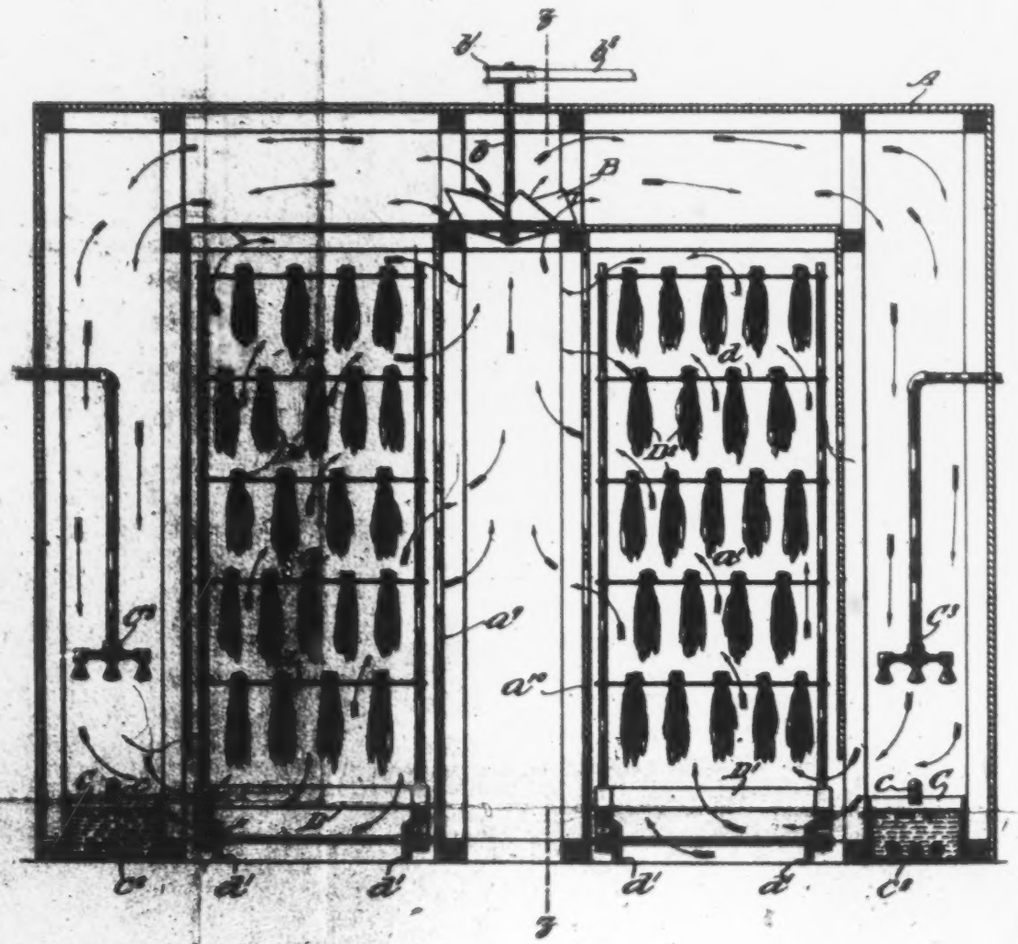
No. 536,175. Patented Mar. 5, 1895.

Fig. 5



No. 535,175. Patented Mar. 5, 1895.

Fig. 5



Witnesses:
Thomas M. Smith
Richard C. Maxwell

Inventor:
Charles H. Schwartz Jr.
By J. Walter Douglass
Attorney.

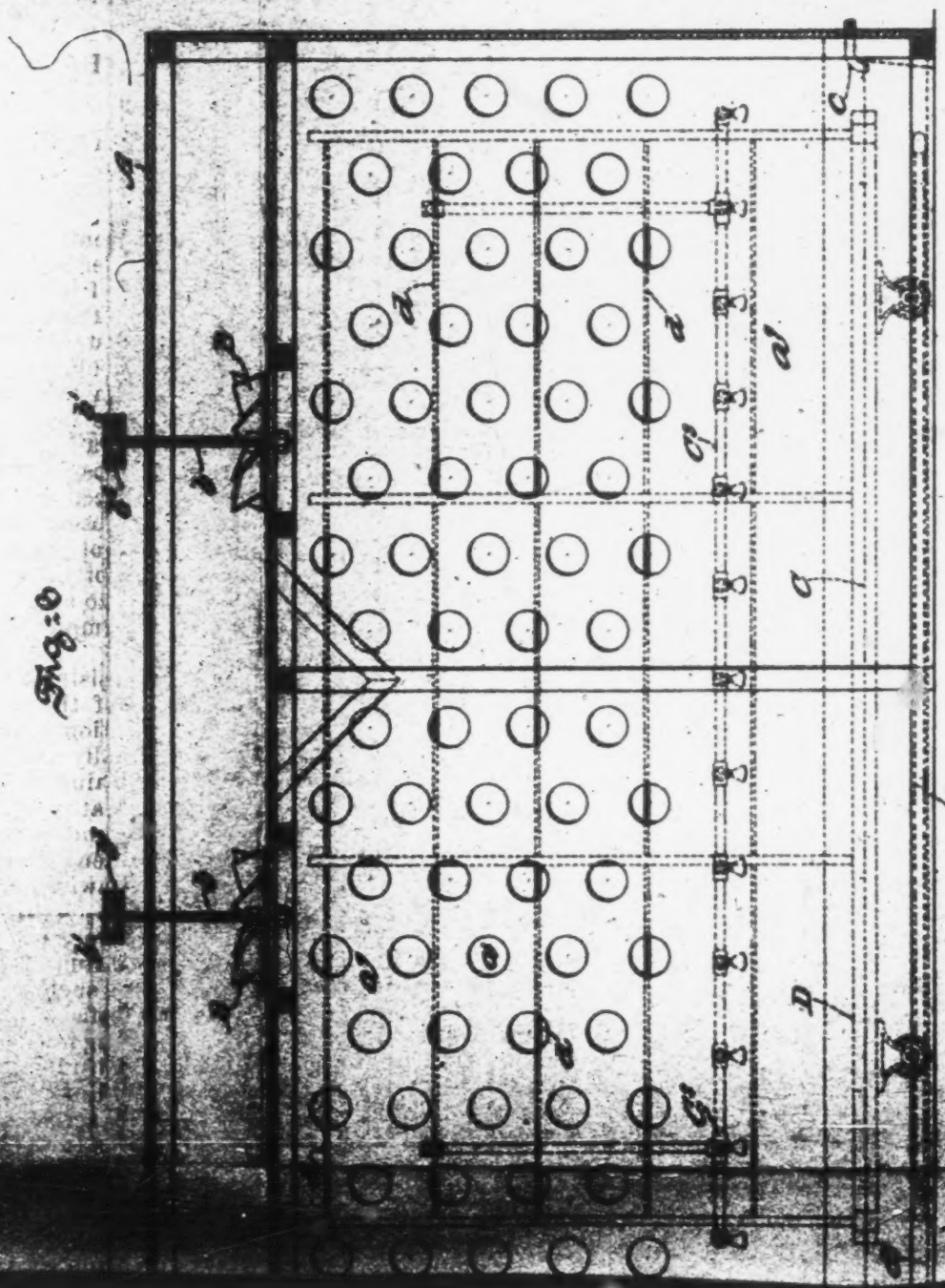
1063

(No Model.) 6 Sheets—Sheet 6.

C. W. SCHWARTZ, Jr.

METHOD OF AND APPARATUS FOR ORDERING TOBACCO.

No. 535,175. Patented Mar. 5, 1895.



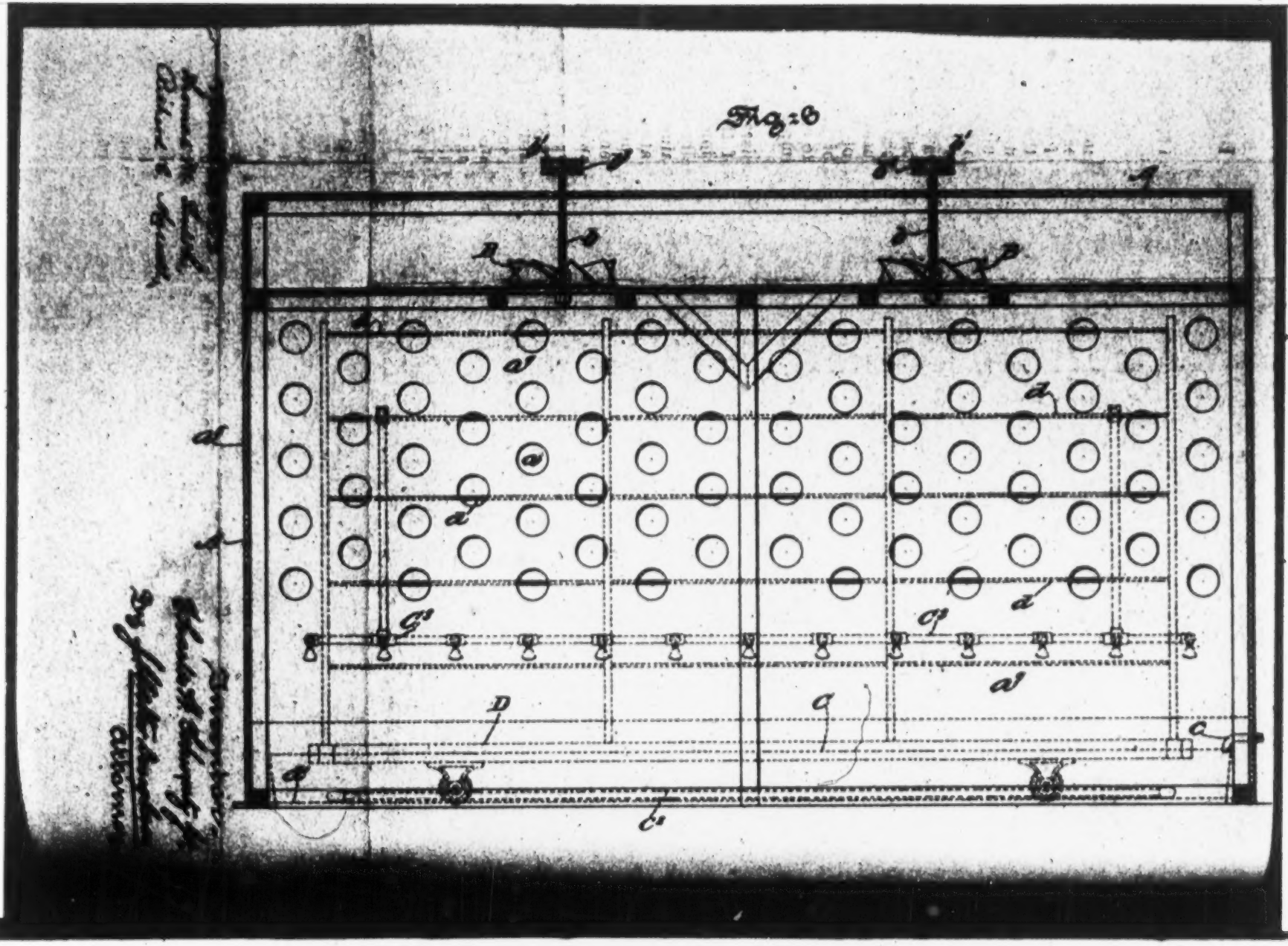


Fig: 6
D

UNITED STATES PATENT OFFICE.

CHARLES W. SCHWARTZ, JR., OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE PHILADELPHIA TEXTILE MACHINERY COMPANY, OF SAME PLACE.

METHOD OF AND APPARATUS FOR ORDERING TOBACCO.

SPECIFICATION forming part of Letters Patent No. 535,175, dated March 5, 1895.

Application filed November 6, 1894. Serial No. 527,941. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. SCHWARTZ, Jr., a citizen of the United States, residing at Germantown, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Methods of and Apparatus for Ordering Tobacco, of which the following is a specification.

My invention relates to a method of and apparatus for ordering tobacco.

The principal objects of my invention are, first, to provide a simple and effective method of hastening the ordering of tobacco so that any tendency to scorching or scalding of the same is entirely prevented and the tobacco rendered sweet in taste and subsequent handling permitted with perfect safety and without fear of crushing the leaves thereof; second, to provide an efficient method of ordering tobacco by circulation and recirculation, which consists in presenting air of one temperature to water of a different temperature in a chamber to cause the latter to be combined so as to produce a humid atmosphere which is forced into the presence of the tobacco absorbing the humidity of the air and again conveying the same into the presence of water to revivify the same and presenting to the tobacco to effect the complete ordering thereof, and, third, to provide suitable apparatus for the conduct of the method of ordering tobacco of my invention.

My invention stated in general terms comprises a method of ordering tobacco by circulation and recirculation which consists in [illegible] of one temperature in the path of [illegible] a different temperature to produce a humid atmosphere and presenting to and [illegible] in such manner as to cause the absorption of the humidity of the air thereby and conveying the air deprived of its humidity to water to supply the same with humidity therefrom, then presenting to water to revivify the same and under pressure forcing again into the presence of the tobacco to effect the complete ordering thereof.

My invention further consists of the method of ordering tobacco by circulation and recirculation, which consists in subjecting air brought to a low temperature into the presence of water maintained at a high temperature to produce a humid atmosphere and presenting continuously to tobacco and successively to water to permit of absorption in the one instance by the tobacco of the humidity of the air and in the other of the supply of the air with humidity so as to again present to the tobacco to effect the complete ordering thereof.

My invention further consists of suitable apparatus for the conduct of the method of ordering tobacco of my invention, constructed and arranged in substantially the manner hereinafter described and claimed.

The nature and general features of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1, is a central vertical section through one form of apparatus embodying features of my invention, and such as in practice has been found well adapted for the conduct of the method of ordering tobacco of my invention. Fig. 2, is a longitudinal section through the apparatus on the line *x*—*x*, of Fig. 1. Fig. 3, is a vertical central section through a modified form of apparatus to that of Fig. 1, for carrying into effect the method of my invention. Fig. 4, is a vertical longitudinal section on the line *y*—*y*, of Fig. 3. Fig. 5, is a vertical central section through a still further modified form of apparatus of my invention; and Fig. 6, is a vertical longitudinal section on the line *z*—*z*, of Fig. 5.

METHOD OF AND APPARATUS FOR ORDERING TOBACCO.

SPECIFICATION forming part of Letters Patent No. 535,175, dated March 5, 1895.

Application filed November 6, 1894. Serial No. 528,041. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. SCHWARTZ, Jr., a citizen of the United States, residing at Germantown, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Methods of and Apparatus for Ordering Tobacco, of which the following is a specification.

My invention relates to a method of and apparatus for ordering tobacco.

The principal objects of my invention are, first, to provide a simple and effective method of hastening the ordering of tobacco so that any tendency to scorching or scalding of the same is entirely prevented and the tobacco rendered sweet in taste and subsequent handling permitted with perfect safety and without fear of crushing the leaves thereof; second, to provide an efficient method of ordering tobacco by circulation and recirculation, which consists in presenting air of one temperature to water of a different temperature in a chamber to cause the latter to be combined so as to produce a humid atmosphere which is forced into the presence of the tobacco absorbing the humidity of the air and again conveying the same into the presence of water to revivify the same and presenting to the tobacco to effect the complete ordering thereof, and, third, to provide suitable apparatus for the conduct of the method of ordering tobacco of my invention.

My invention stated in general terms comprises a method of ordering tobacco by circulation and recirculation which consists in presenting air of one temperature in the path of water of a different temperature to produce a humid atmosphere and presenting to suspended tobacco in such manner as to cause an absorption of the humidity of the air thereby and conveying the air deprived of its humidity to water to supply the same with humidity and presenting again to the tobacco to effect complete or thorough ordering of the same.

My invention further consists in the method of ordering tobacco, of forcing air of one temperature into the presence of water of higher temperature to produce a humid atmosphere and presenting to tobacco, which absorbs humidity therefrom, then presenting to water to revivify the same and under pressure forcing again into the presence of the tobacco to effect the complete ordering thereof.

My invention further consists of the method of ordering tobacco by circulation and recirculation, which consists in subjecting air brought to a low temperature into the presence of water maintained at a high temperature to produce a humid atmosphere and presenting continuously to tobacco and successively to water to permit of absorption in the one instance by the tobacco of the humidity of the air and in the other of the supply of the air with humidity so as to again present to the tobacco to effect the complete ordering thereof.

My invention further consists of suitable apparatus for the conduct of the method of ordering tobacco of my invention, constructed and arranged in substantially the manner hereinafter described and claimed.

The nature and general features of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1, is a central vertical section through one form of apparatus embodying features of my invention, and such as in practice has been found well adapted for the conduct of the method of ordering tobacco of my invention. Fig. 2, is a longitudinal section through the apparatus on the line x—x, of Fig. 1. Fig. 3, is a vertical central section through a modified form of apparatus to that of Fig. 1, for carrying into effect the method of my invention. Fig. 4, is a vertical longitudinal section on the line y—y, of Fig. 3. Fig. 5, is a vertical central section through a still further modified form of apparatus of my invention; and Fig. 6, is a vertical longitudinal section on the line z—z, of Fig. 5.

Referring to the drawings *A*, is a housing provided with internal chambers *a* and *a'*, partially separated from each other by a partition a^2, with reference to Figs. 1 and 2, of the drawings. In the partition a^2, at the upper portion thereof is provided an opening, into which is mounted a propeller fan or agi-

tating device B, mounted on a cross shaft b which extends through the housing A, and carries a pulley b', and a belt b^2, for effecting the rotation of the said fan or agitating device B.

a^2, is an opening in the lower portion of said partition a^2, for a purpose to be presently explained.

In the bottom of the chamber a, is mounted an oblong trough or tank C, adapted to contain water introduced into the same by means of a spigot c, having a stop-cock c'. In the bottom of the trough or tank C, is provided a coiled pipe c^2, for heating the water therein in such manner as that the same will be maintained at a higher temperature than the air caused to circulate around or about the water of this trough C. Above the tank or trough C, is provided a cooling or refrigerating coiled or other appliance C', for reducing the temperature of the air caused to circulate in the chambers of the housing A, and so that it may be maintained at such a temperature as to intimately blend or combine with the water of a higher temperature traveling in the path thereof and thereby producing the required humid atmosphere for presenting by circulation and recirculation to the tobacco to be absorbed by it in whole or in part to dampen and order the same.

D, is a truck adapted to be introduced into the chamber a', and provided with cross rods d, for supporting bunches of tobacco D^2, therefrom.

d', are rails over which the truck is moved into and out of the housing A, through a door a^3, provided in one of the side or end walls of the same.

In the operation of the apparatus of Figs. 1 and 2, the air is forced by means of the propeller or agitating device B, into the chamber a, and the temperature of the water in the chamber a, being raised by means of the steam coil c^2, so as to raise the air therein freed from the agitating influence of said device D, and in a more or less calm state, will be brought to and maintained at a lower temperature than the water by the cooling or refrigerating appliance C', in the chamber a', and until it is caused to [illegible] with the water to produce a humid [illegible] in the chamber a, of the housing A, and when after the starting up of the apparatus is continuously continued through the chambers a and a', into the presence of the tobacco D^2, in the latter chamber a', and

With reference to Figs. 3 and 4, the apparatus is substantially the same as that of Figs. 1 and 2, with the following exceptions:—The blowing or agitating device B', in the present instance, is provided with a transverse conduit b^3, extending substantially the width of the housing A, and connected therewith are longitudinal pipes or conduits b^4, on each side provided with depending perforated pipes b^5, as clearly illustrated in Fig. 4. Within the housing A, are mounted two trucks D and D', on rails d', secured to the floor thereof, and with a water tank or trough C, located in a central chamber a^2, and having a heating coil extending through the tank or trough for not only heating, but also maintaining the water therein at a different temperature from that of air caused to circulate through the internal chambers of the housing A, and becoming associated with the water to produce a humid atmosphere, for being presented to the tobacco in bunch or other form suspended from the trucks D and D', as fully illustrated in Fig. 3.

b^7, is a pipe or conduit located beneath the roof of the housing on the inside thereof and connected with the rear of the blowing device B'. This pipe or conduit b^7, is provided with a series of depending inlets b^8, and at the left hand end thereof is provided a large inlet or throat b^9, for sucking air into the same deprived of its moisture or humidity through its absorption by the tobacco and which air is also drawn through the series of inlets b^8, of said conduit b^7, thereby and conducted rearwardly into the blowing device B', and by which latter means the air is again conveyed through the transverse conduit b^3, and then longitudinally and downwardly through the perforated depending pipes or conduits b^4 and b^5, in such manner as that the presence of the air of one temperature from said perforated pipes b^5, on both sides of the interior of the housing, then in a more or less calm state or condition, will be brought into the path of water in the tank or vat C, of a different temperature, thereby receiving moisture therefrom and thus converting the air into a humid atmosphere which is presented by circulation and recirculation to the tobacco suspended from the trucks D and D' to effect first moistening of the body or surface of the tobacco and then complete ordering of the same.

It may be here remarked that the cooling or

In the bottom of the chamber a, is mounted an oblong trough or tank C, adapted to contain water introduced into the same by means of a spigot c, having a stop-cock c'. In the bottom of the trough or tank C, is provided a coiled pipe c^2, for heating the water therein in such manner as that the same will be maintained at a higher temperature than the air caused to circulate around or about the water of this trough C. Above the tank or trough C, is provided a cooling or refrigerating coiled or other appliance C', for reducing the temperature of the air caused to circulate in the chambers of the housing A, and so that it may be maintained at such a temperature as to intimately blend or combine with the water of a higher temperature traveling in the path thereof and thereby producing the required humid atmosphere for presenting by circulation and recirculation to the tobacco to be absorbed by it in whole or in part to dampen and order the same.

D, is a truck adapted to be introduced into the chamber a', and provided with cross rods d, for supporting bunches of tobacco D^2, therefrom.

d', are rails over which the truck is moved into and out of the housing A, through a door a^3, provided in one of the side or end walls of the same.

In the operation of the apparatus of Figs. 1 and 2, the air is forced by means of the propeller or agitating device B, into the chamber a, and the temperature of the water in the chamber a, being raised by means of the steam coil c^2, so as to cause the air therein freed from the agitating influence of said device D, and in a more or less calm state and brought to and maintained at a lower temperature than the water by the cooling or refrigerating appliance C', in the chamber a', and until it is caused to associate with the water to produce a humid atmosphere in the chamber a, of the housing A, and which after the starting up of the apparatus is continuously conducted through the chambers a and a', into the presence of the tobacco D^2, in the latter chamber a', and the humidity of the air is absorbed by the tobacco suspended from the truck D, therein and under the influence of the propeller fan or agitating device B, the air having the humidity dissociated therefrom is carried back again into the chamber a, where it becomes again a humid atmosphere and is conveyed into the presence of the tobacco to effect first the moistening or dampening of the surface or body thereof and by continuous circulation and recirculation of the air supplied with moisture, complete ordering of the tobacco.

provided with depending perforated pipes, as clearly illustrated in Fig. 4. Within the housing A, are mounted two trucks D and D', on rails d', secured to the floor thereof, and with a water tank or trough C, located in a central chamber a^3, and having a heating coil extending through the tank or trough for not only heating, but also maintaining the water therein at a different temperature from that of air caused to circulate through the internal chambers of the housing A, and becoming associated with the water to produce a humid atmosphere, for being presented to the tobacco in bunch or other form suspended from the trucks D and D', as fully illustrated in Fig. 3.

b^7, is a pipe or conduit located beneath the roof of the housing on the inside thereof and connected with the rear of the blowing device B'. This pipe or conduit b^7, is provided with a series of depending inlets b^8, and at the left hand end thereof is provided a large inlet or throat b^9, for sucking air into the same deprived of its moisture or humidity through its absorption by the tobacco and which air is also drawn through the series of inlets b^8, of said conduit b^7, thereby and conducted rearwardly into the blowing device B', and by which latter means the air is again conveyed through the transverse conduit b^5, and then longitudinally and downwardly through the perforated depending pipes or conduits b^4 and b^6, in such manner as that the presence of the air of one temperature from said perforated pipes b^6, on both sides of the interior of the housing, then in a more or less calm state or condition, will be brought into the path of water in the tank or vat C, of a different temperature, thereby receiving moisture therefrom and thus converting the air into a humid atmosphere which is presented by circulation and recirculation to the tobacco suspended from the trucks D and D', to effect first moistening of the body or surface of the tobacco and then complete ordering of the same.

It may be here remarked that the cooling or refrigerating appliance may be in the nature of a sprayer or any other somewhat similar means to be further explained to reduce the temperature of air circulating in and about the interior of the housing below the temperature of the heated water of the tank or trough C.

With reference to Figs. 5 and 6, the apparatus therein differs from that hereinbefore described in the following particulars:—Instead of providing on the interior of the housing A, a series of depending perforated tubes

b^7, connected with pipes or conduits b^4, and with a main conduit b^5, in which air is conducted therethrough by means of a blowing device B', propeller fans B, as illustrated in Figs. 1 and 2, are employed in the top of the housing and the air is forced therefrom and thereby in different directions as indicated by the arrows in Fig. 5, and in a more or less calm state by this time, into the presence of water maintained at a different temperature from the air, so that the latter may effectually absorb the water and thus create a humid atmosphere for presenting to the tobacco supported from the trucks D and D', in the chambers a and a', which are separated from each other by means of partitions a^9 and a^{10}. These partitions are provided with staggered openings, as clearly illustrated in Fig. 5. The cooling or refrigerating appliance for reducing the temperature of circulating air in this instance is in the nature of a water sprayer or atomizer c^3, as fully illustrated in Figs. 5 and 6. In other respects the apparatus is the same as that hereinbefore fully explained and the devices associated with the apparatus operate in the same manner as they do with reference to Figs. 1 to 4, of the drawings.

It will be manifestly obvious to those skilled in the art to which my invention appertains that still further modifications as to details of construction of the apparatus and arrangement of the devices connected therewith may be made, without departing from the spirit and scope thereof; and hence I do not wish to be understood as limiting myself to the precise arrangements of all the parts of the apparatus as illustrated; but

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The method of ordering tobacco, which consists in continuously presenting air of one temperature in a chamber to water of another temperature to produce a humid atmosphere, conveying the same into the presence of tobacco to effect dampening thereof, and causing successively the air deprived of its humidity to be revivified and again presented to the tobacco to effect ordering thereof, substantially as described.

2. The method of ordering tobacco, which consists in forcing air into the presence of water of a temperature differing from the air to become associated therewith by producing a humid atmosphere, conveying the same to tobacco which absorbs the humidity thereof, conducting the air deprived of its humidity [illegible] to revivify the same and then ing the same to tobacco, reconveying into the presence of water and presenting again to the tobacco to effect ordering thereof, substantially as described.

4. The method of ordering tobacco, which consists in presenting air artificially lowered in temperature in the path of heated water to cause association of one with the other so as to produce a humid atmosphere which is presented to tobacco, successively revivifying the air deprived of its moisture by the absorption of the same by the tobacco and recirculating the same through the tobacco, substantially as and for the purposes described.

5. The method of ordering tobacco, which consists in presenting air artificially changed as to its temperature beyond the point of agitation thereof to water maintained at a different temperature and by association of one with the other producing a humid atmosphere, continuously presenting to tobacco and successively revivifying the same deprived of its humidity through its absorption by the tobacco and again presenting thereto, substantially as and for the purposes described.

6. An apparatus for ordering tobacco, comprising a housing provided with a water tank or trough having means for heating said water, a cooling or refrigerating appliance, and a blowing or forcing device for circulating and recirculating air in the path of the water of said tank or trough, substantially as and for the purposes described.

7. An apparatus for ordering tobacco, comprising a housing provided with two communicating chambers, a blowing or forcing device for circulating and recirculating air, a water tank or trough provided with a heating device, and means for supporting tobacco in said housing, substantially as and for the purposes described.

8. An apparatus for ordering tobacco, comprising a housing provided with means adapted to contain water and maintain the same at a different temperature from that of the air therein, means for circulating and recirculating the air through said housing, and means for supporting tobacco in said housing and subjecting the same to the influence of the generated humid atmosphere therein, substantially as and for the purposes described.

9. An apparatus for ordering tobacco, comprising a housing having internal chambers, means for containing water in one of said chambers and a cooling appliance, means for circulating and recirculating the air through said housing in each instance anterior to its being presented to the water, and means for supporting tobacco in the other chamber of

presence of water maintained at a different temperature from the air, so that the latter may effectually absorb the water and thus create a humid atmosphere for presenting to the tobacco supported from the trucks D and D', in the chambers a and a', which are separated from each other by means of partitions a^9 and a^{10}. These partitions are provided with staggered openings, as clearly illustrated in Fig. 5. The cooling or refrigerating appliance for reducing the temperature of circulating air in this instance is in the nature of a water sprayer or atomizer c^3, as fully illustrated in Figs. 5 and 6. In other respects the apparatus is the same as that hereinbefore fully explained and the devices associated with the apparatus operate in the same manner as they do with reference to Figs. 1 to 4, of the drawings.

It will be manifestly obvious to those skilled in the art to which my invention appertains that still further modifications as to details of construction of the apparatus and arrangement of the devices connected therewith may be made, without departing from the spirit and scope thereof; and hence I do not wish to be understood as limiting myself to the precise arrangements of all the parts of the apparatus as illustrated; but

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The method of ordering tobacco, which consists in continuously presenting air of one temperature in a chamber to water of another temperature to produce a humid atmosphere, conveying the same into the presence of tobacco to effect dampening thereof, and causing successively the air deprived of its humidity to be revivified and again presented to the tobacco to effect ordering thereof, substantially as described.

2. The method of ordering tobacco, which consists in forcing air into the presence of water of a temperature differing from the air to become associated therewith by producing a humid atmosphere, conveying the same to tobacco which absorbs the humidity thereof, conducting the air deprived of its humidity to the water to revivify the same and then presenting the air recharged with moisture to the tobacco to effect ordering thereof, substantially as described.

3. The method of ordering tobacco, which consists in presenting under pressure air of a low temperature to water of a high temperature to create a humid atmosphere, conveying presented to tobacco, successively revivifying the air deprived of its moisture by the absorption of the same by the tobacco and recirculating the same through the tobacco, substantially as and for the purposes described.

5. The method of ordering tobacco, which consists in presenting air artificially changed as to its temperature beyond the point of agitation thereof to water maintained at a different temperature and by association of one with the other producing a humid atmosphere, continuously presenting to tobacco and successively revivifying the same deprived of its humidity through its absorption by the tobacco and again presenting thereto, substantially as and for the purposes described.

6. An apparatus for ordering tobacco, comprising a housing provided with a water tank or trough having means for heating said water, a cooling or refrigerating appliance, and a blowing or forcing device for circulating and recirculating air in the path of the water of said tank or trough, substantially as and for the purposes described.

7. An apparatus for ordering tobacco, comprising a housing provided with two communicating chambers, a blowing or forcing device for circulating and recirculating air, a water tank or trough provided with a heating device, and means for supporting tobacco in said housing, substantially as and for the purposes described.

8. An apparatus for ordering tobacco, comprising a housing provided with means adapted to contain water and maintain the same at a different temperature from that of the air therein, means for circulating and recirculating the air through said housing, and means for supporting tobacco in said housing and subjecting the same to the influence of the generated humid atmosphere therein, substantially as and for the purposes described.

9. An apparatus for ordering tobacco, comprising a housing having internal chambers, means for containing water in one of said chambers and a cooling appliance, means for circulating and recirculating the air through said housing in each instance anterior to its being presented to the water, and means for supporting tobacco in the other chamber of said housing, substantially as and for the purposes described.

10. An apparatus for ordering tobacco, comprising a housing divided into internal communicating chambers having openings in the partitions thereof, a water trough or vats with heating means therein, a forcing or blowing

device for circulating and recirculating air within said housing, means for supporting tobacco in one of said internal chambers, and means for heating the air located in the other of said chambers, substantially as and for the purposes described.

In witness whereof I have hereunto set my signature in the presence of two subscribing witnesses.

CHARLES W. SCHWARTZ, JR.

Witnesses:
THOMAS M. SMITH,
RICHARD C. MAXWELL.

1063

(No Model.) 3 Sheets—Sheet 1.

J. K. PROCTOR.

APPARATUS FOR ORDERING TOBACCO.

No. 553,723. Patented Jan. 28, 1896.

Fig: 1

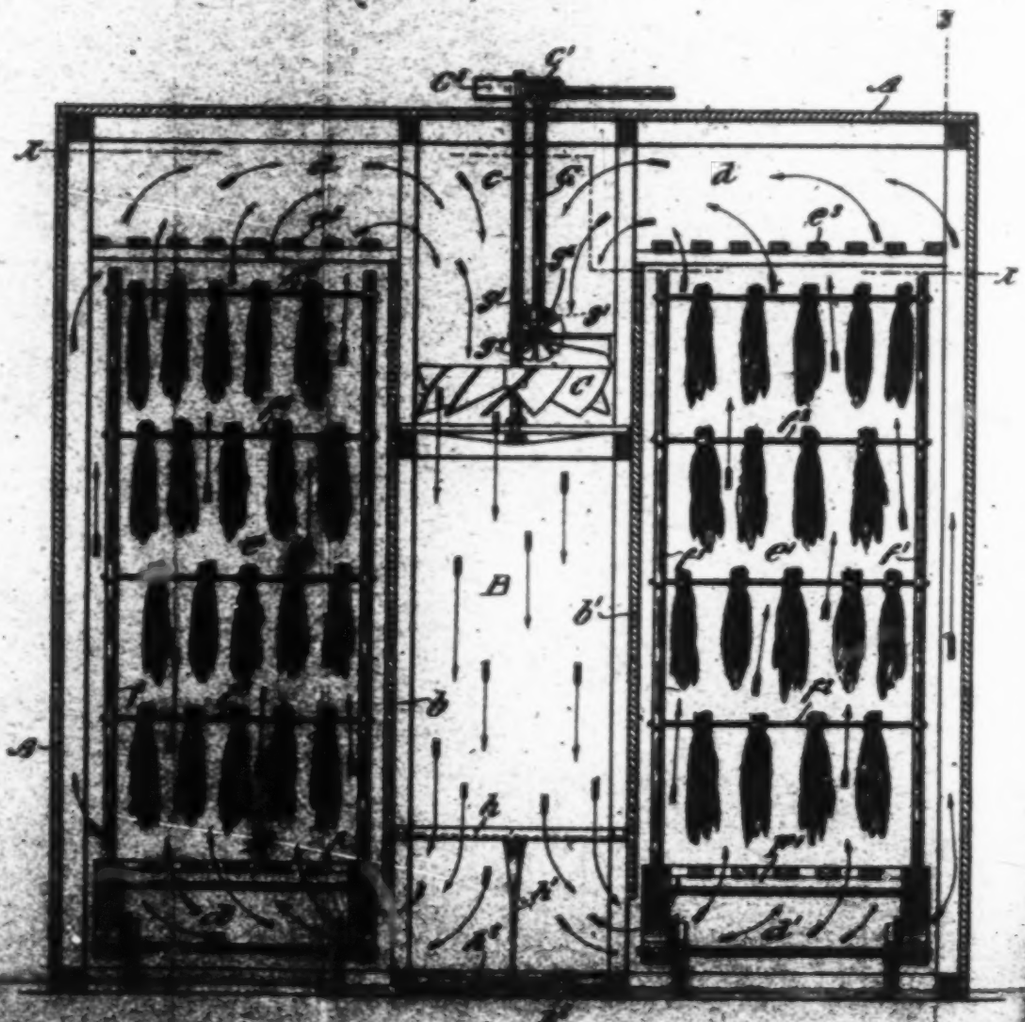
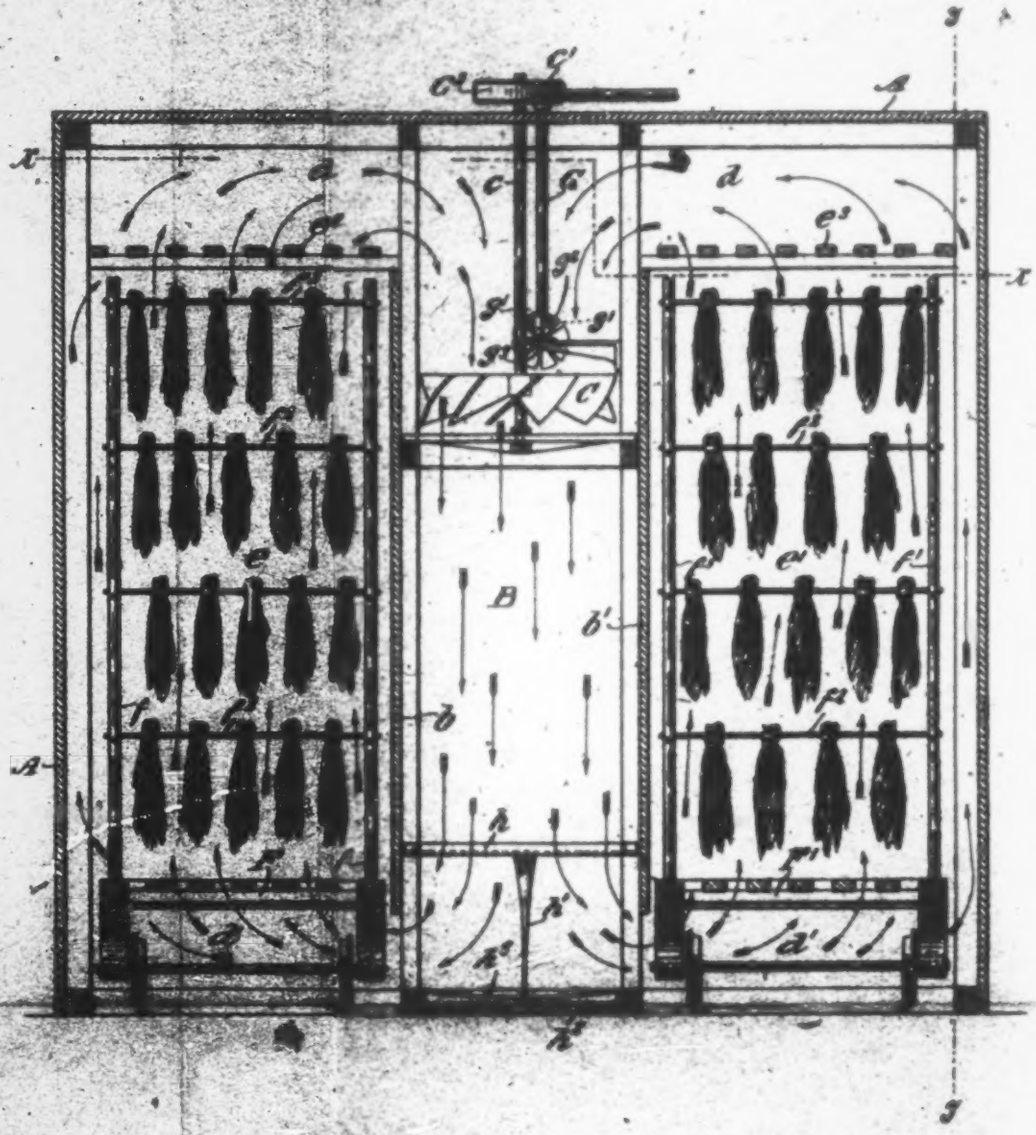


Fig: 1



Witnesses:
Richard S. Maxwell,
Thomas M. Smith

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Attorneys.

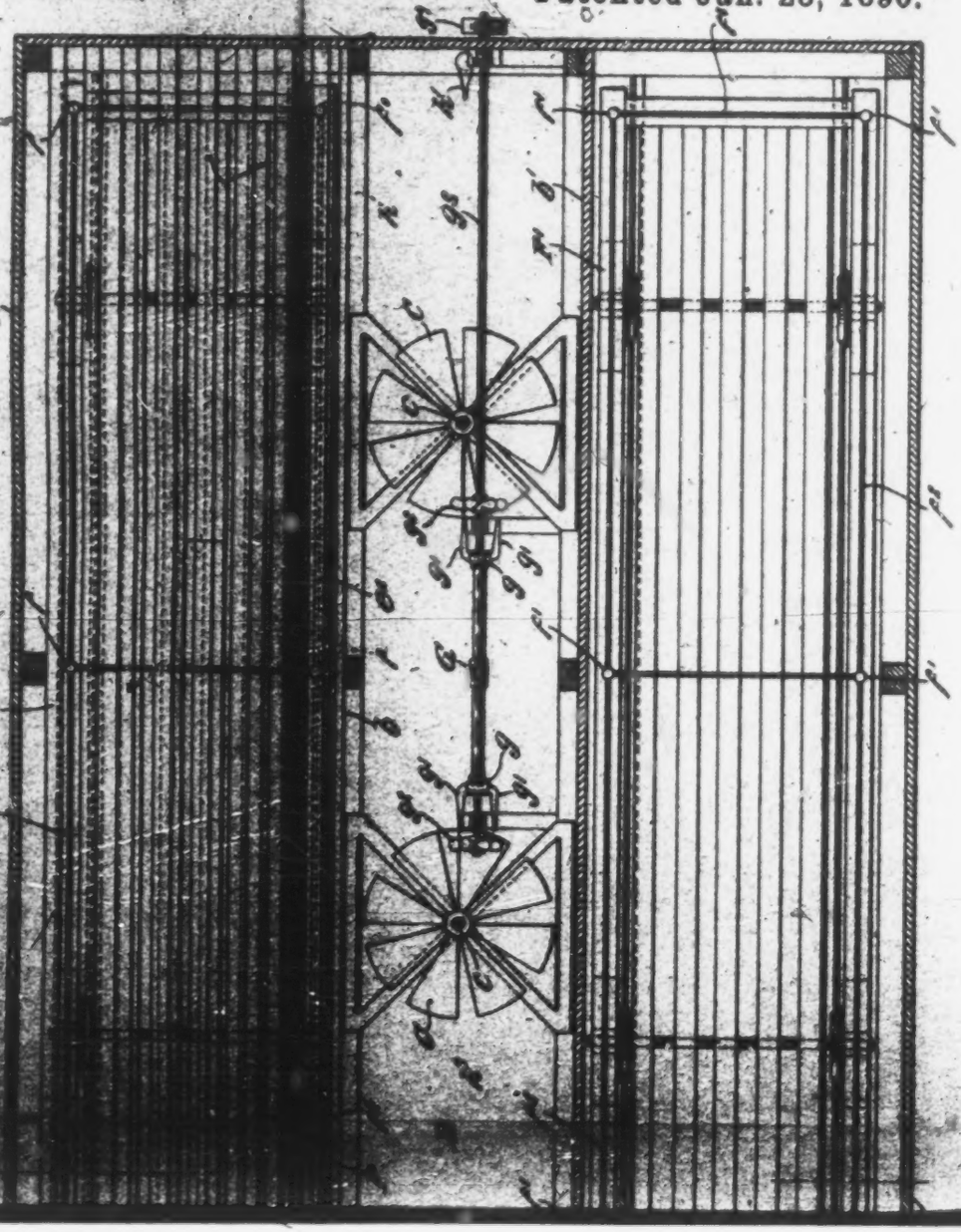
1069

(No Model.) 3 Sheets—Sheet 2.

J. K. PROCTOR.

APPARATUS FOR ORDERING TOBACCO.

No. 553,723. Patented Jan. 28, 1896.



No. [illegible] Patented Jan. 28, 1896.

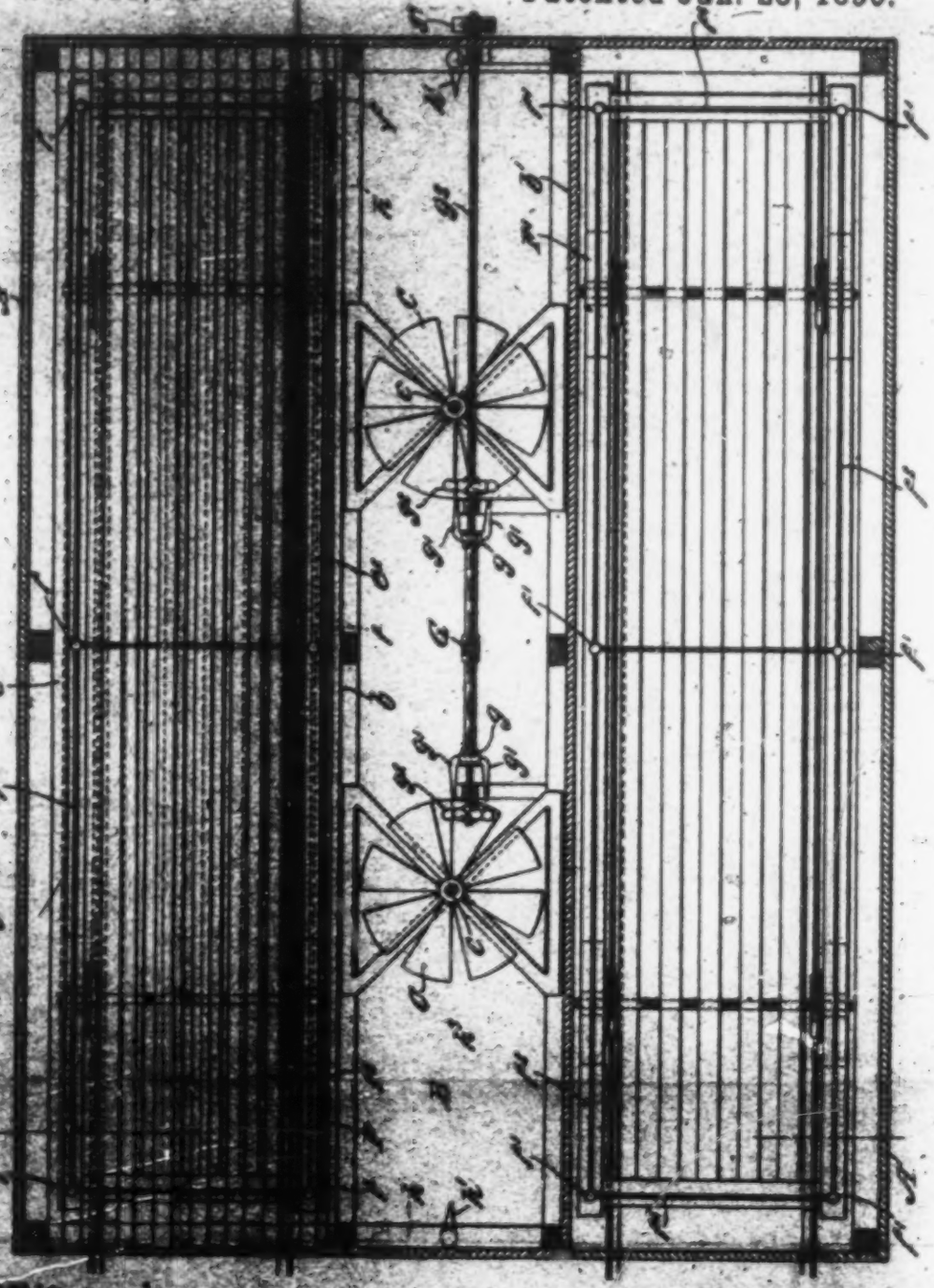


Fig: 2

Witnesses:
Richard E. Maxwell
Thomas M. Smith

Inventor.
Josiah K. Proctor,
By [illegible]
Attorney.

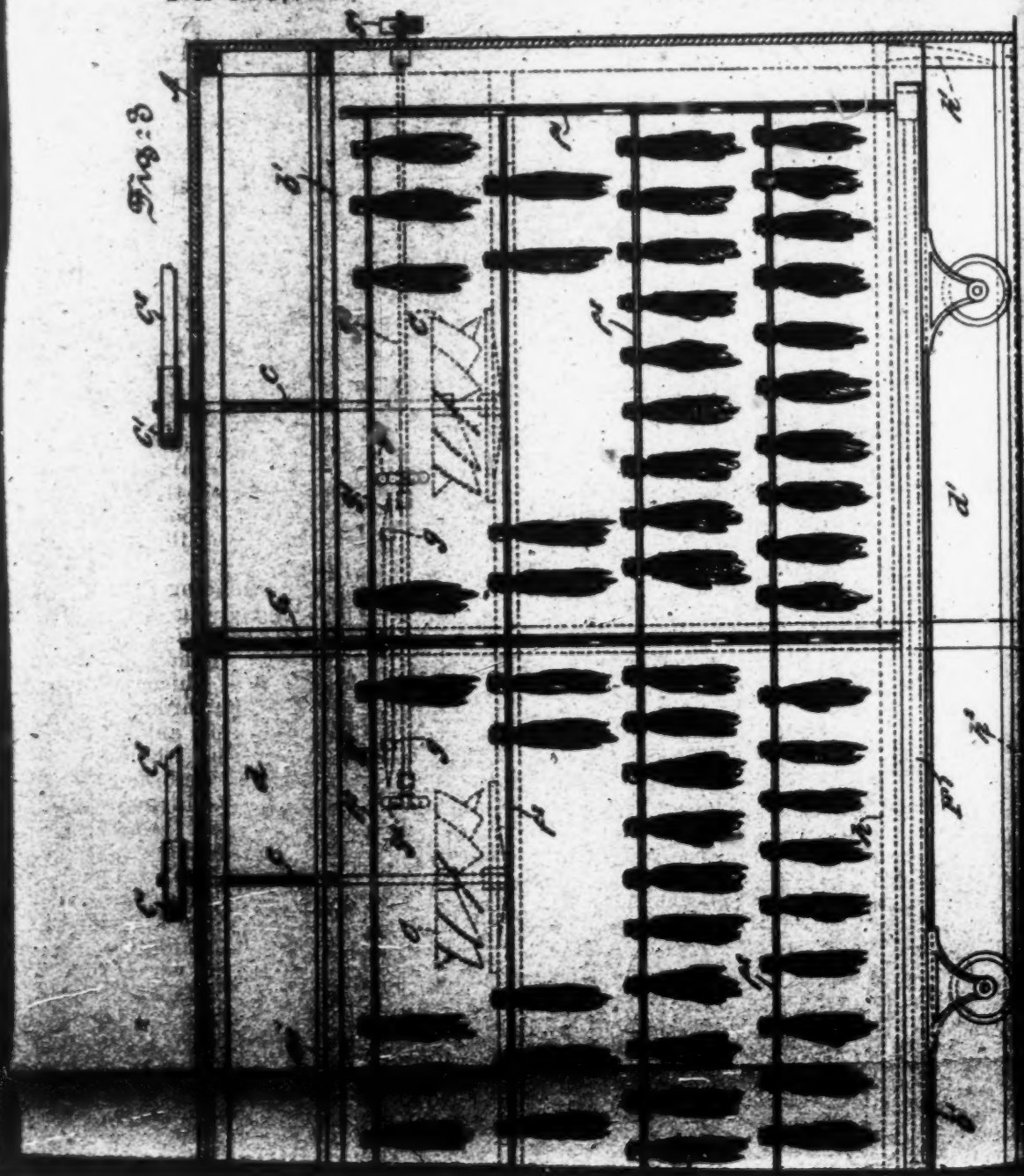
1070

(No Model.) 3 Sheets—Sheet 3.

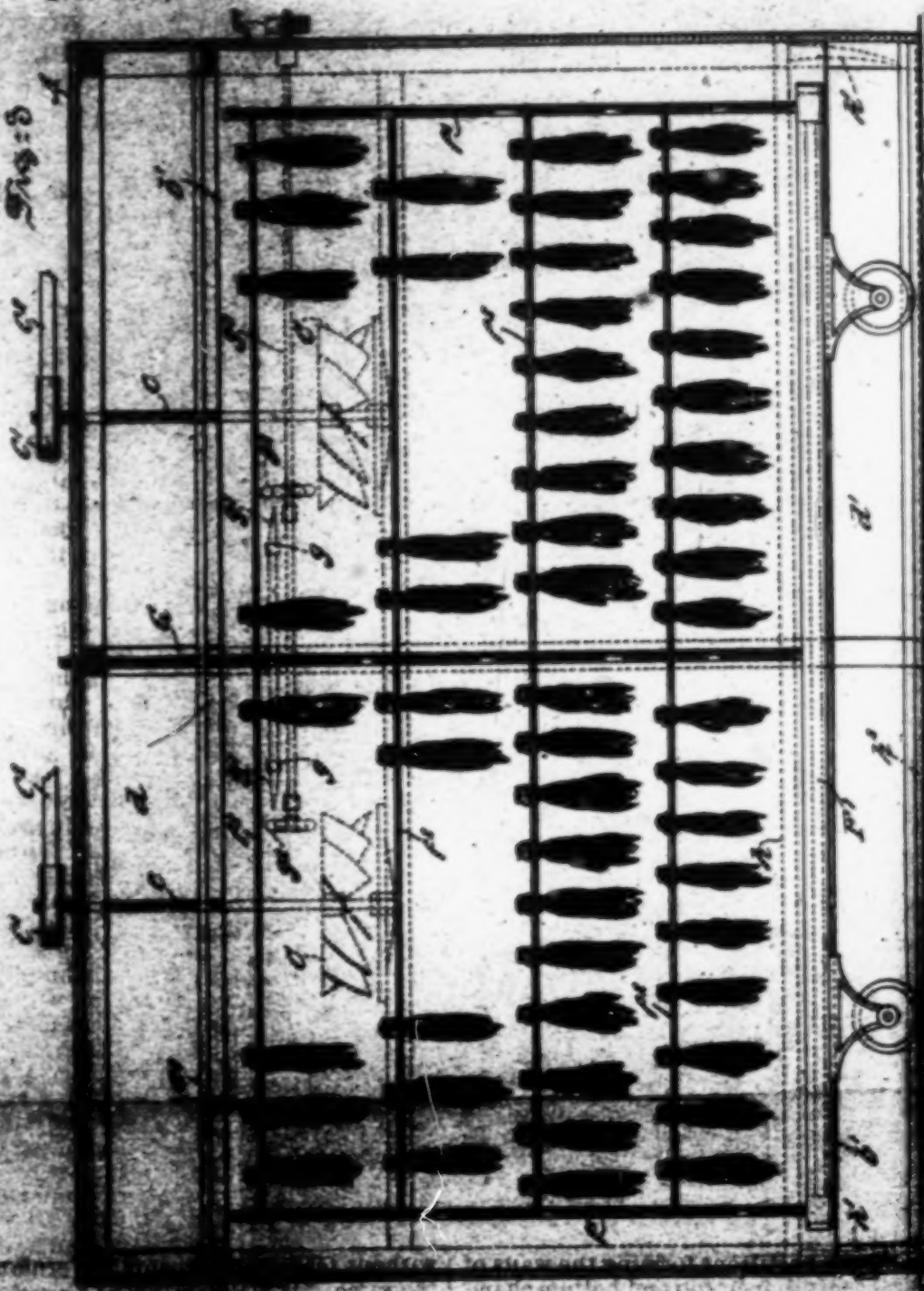
J. K. PROCTOR.

APPARATUS FOR ORDERING TOBACCO.

No. 553,723. Patented Jan. 28, 1896.



No. 553,723. Patented Jan. 28, 1896.



Witnesses:

Inventor
Josiah K. Porter
By J. Walter
Attorney

UNITED STATES PATENT OFFICE.

JOSIAH K. PROCTOR, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE PHILADELPHIA TEXTILE MACHINERY COMPANY, OF SAME PLACE.

APPARATUS FOR ORDERING TOBACCO.

SPECIFICATION forming part of Letters Patent No. 553,723, dated January 28, 1896.

Application filed September 6, 1894. Serial No. 522,241. (No model.)

To all whom it may concern:

Be it known that I, JOSIAH K. PROCTOR, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Ordering Tobacco, of which the following is a specification.

My invention has relation to apparatus for ordering tobacco.

The principal object of my invention is to provide an apparatus for hastening the ordering of tobacco by preventing any tendency to scorching or scalding thereof, and thereby to render the tobacco sweet in taste, and so conducting the ordering as to permit of the subsequent handling of the same with perfect safety and without fear of crushing the leaf.

My invention consists of an apparatus adapted for ordering tobacco, substantially as hereinafter described and claimed.

The nature and general features of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, in which—

Figure 1 is a vertical sectional view through an apparatus embodying features of my invention and such as in practice have been found well adapted for the ordering of tobacco according to my invention. Fig. 2 is a [illegible] view on the line *x x* of Fig. 1 with the [illegible] housing removed; and Fig. 3 is a [illegible] cross-sectional view on the line *y y* of Fig. 1, showing the internal arrangement of certain of the compartments or communicating chambers of the apparatus of my invention.

Referring to the drawings, A is a housing of any suitable shape or form.

[illegible] partitions forming the walls of a vertical central open top and bottom chamber [illegible] provided with fans or agitating devices [illegible] mounted on shaft *c* therein, which consisting of slats or strips e^3 and e^3 at the top, and by movable barriers such as slatted frames or trucks F and F' at the bottom. These frames or trucks are provided with uprights or supports *f* and *f'* and with a series of cross-rods f^2 for suspending therefrom bundles of tobacco in the chambers *e* and *e'*. These chambers *e* and *e'* are arranged so that a direct communication is established with the cross-chambers *d* and *d'* through the openings or slits in the top and bottom of said chambers *e* and *e'*, as clearly illustrated in Fig. 1 of the drawings.

G is a water-supply extending downward through the top of the housing A and provided with a T-branch *g*, having tapering ends or nozzles *g'*, arranged in the path of rotatable agitators or fans g^3, which are supported on a shaft g^3, rotated through a pulley g^4 by means of a belt from any suitable source of power, (not shown,) whereby the water in its passage through the branch pipe *g* of the supply G is discharged in the form of a fine spray into the presence of the air in the central chamber B and caused thereby to circulate, under the vigorous agitation of the fans C, continuously through the series of internal chambers of the housing A, induced by suction, so as to give off the humidity created in the air to the tobacco, which is absorbed thereby on all sides or surfaces thereof, not only to dampen the same, but also to completely effect the uniform ordering thereof.

It may be here remarked that tobacco has an affinity for humid air, and the conditions and arrangements of the internal parts of the apparatus as above explained are such that most satisfactory results are obtained in the ordering, and in consequence subsequent working of the tobacco can be readily effected without fear of the crushing or crumbling of the same. It may be further remarked that the slatted roof and bottom of each of the chambers *e* and *e'* afford the means whereby

APPARATUS FOR ORDERING TOBACCO.

SPECIFICATION forming part of Letters Patent No. 553,723, dated January 28, 1896.

Application filed September 6, 1894. Serial No. 522,241. (No model.)

To all whom it may concern:

Be it known that I, JOSIAH K. PROCTOR, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Ordering Tobacco, of which the following is a specification.

My invention has relation to apparatus for ordering tobacco.

The principal object of my invention is to provide an apparatus for hastening the ordering of tobacco by preventing any tendency to scorching or scalding thereof, and thereby to render the tobacco sweet in taste, and so conducting the ordering as to permit of the subsequent handling of the same with perfect safety and without fear of crushing the leaf.

My invention consists of an apparatus adapted for ordering tobacco, substantially as hereinafter described and claimed.

The nature and general features of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, in which—

Figure 1 is a vertical sectional view through an apparatus embodying features of my invention and such as in practice have been found well adapted for the ordering of tobacco according to my invention. Fig. 2 is a top view on the line x x of Fig. 1 with the top of the housing removed; and Fig. 3 is a vertical cross-sectional view on the line y-y of Fig. 1, showing the internal arrangement of certain of the compartments or communicating chambers of the apparatus of my invention.

Referring to the drawings, A is a housing of any suitable shape or form.

b and b' are partitions forming the walls of a vertical central open top and bottom chamber B, provided with fans or agitating devices C, mounted on shaft c therein, which shafts extend through the top of the housing A and are provided with pulleys c' engaged by belts c^2, which are actuated from any suitable source of power. (Not shown.)

d and d' are top and bottom cross-chambers partially separated from the vertical side chambers e and e' by means of barriers consisting of slats or strips e^2 and e^3 at the top, and by movable barriers such as slatted frames or trucks F and F' at the bottom. These frames or trucks are provided with uprights or supports f and f' and with a series of cross-rods f^2 for suspending therefrom bundles of tobacco in the chambers e and e'. These chambers e and e' are arranged so that a direct communication is established with the cross-chambers d and d' through the openings or slits in the top and bottom of said chambers e and e', as clearly illustrated in Fig. 1 of the drawings.

G is a water-supply extending downward through the top of the housing A and provided with a T-branch g, having tapering ends or nozzles g', arranged in the path of rotatable agitators or fans g^2, which are supported on a shaft g^3, rotated through a pulley g^4 by means of a belt from any suitable source of power, (not shown,) whereby the water in its passage through the branch pipe g of the supply G is discharged in the form of a fine spray into the presence of the air in the central chamber B and caused thereby to circulate, under the vigorous agitation of the fans C, continuously through the series of internal chambers of the housing A, induced by suction, so as to give off the humidity created in the air to the tobacco, which is absorbed thereby on all sides or surfaces thereof, not only to dampen the same, but also to completely effect the uniform ordering thereof.

It may be here remarked that tobacco has an affinity for humid air, and the conditions and arrangements of the internal parts of the apparatus as above explained are such that most satisfactory results are obtained in the ordering, and in consequence subsequent working of the tobacco can be readily effected without fear of the crushing or crumbling of the same. It may be further remarked that the slatted roof and bottom of each of the chambers e and e' afford the means whereby in the passage of the volume of humid air into the presence of the suspended leaf-tobacco it is enabled to momentarily expand and thus thoroughly, as practice has demonstrated, order the tobacco, and the air deprived of its humidity given off to the tobacco and absorbed thereby to a greater or less extent,

under the influence of suction, is successively liberated into the presence of the atomizing and forcing appliances in the central chamber of the apparatus, where it is revivified and again presented in a humid condition to the tobacco to completely order the same. It will be observed that the circulation of the humid air is continuous, and also that it may be made more or less vigorous, according as the speed of the fans or agitating devices C are increased or decreased. Again these devices are the means for forcing the humid air continuously by circulation and recirculation through the apparatus into the presence of the tobacco suspended in certain of the chambers of the apparatus, aided by suction.

The slatted bottom frames or trucks of the apparatus can be removed with the tobacco supported thereon through doors to be provided in the walls of the housing A.

Any water in bead or drop form carried by the air in the central chamber B and thrown against the partitions *b* and *b'* will drip into an annular trough *h* in the lower part thereof, as clearly shown in Fig. 1. This trough *h* may be provided with a strip of burlap or other suitable material h^4, depending therefrom into a pan or drip-receptacle h^3, as clearly illustrated in Fig. 1 of the drawings, and provided with a loose cover or strip of burlap or other absorbent material h^4, spread over the said pan, whereby through capillary attraction beads or drops of water liberated from the air and falling in the mixing and agitating chamber B will ultimately find their way into the pan or drip-receptacle h^3, and may be removed therefrom through an outlet in the bottom of the pan. (Not shown.)

The arrangement of the apparatus described for the carrying out of the invention, as hereinbefore explained, is such as to permit of great uniformity of action of the moist air among and upon the ordered tobacco, so that absorption of the moisture of the air by the tobacco is very evenly accomplished throughout all the tobacco chambers of the apparatus. This was not the case with apparatus heretofore employed, because the [illegible] arrangement and the wetting of the tobacco perfect uniformity of ordering is insured for the reason that all the tobacco is subjected to like currents of humidified air, which remains in uniform condition and contact with the tobacco during the entire period of ordering, and the affinity of the tobacco for such an atmosphere is fully carried out, so that prizing of the same for storage can be effected upon removal from the ordering-compartments without "bulking" or "picking" or the expense incident thereto.

It will be manifestly obvious to those skilled in the art to which my invention appertains, as extended practice thereof has demonstrated, that modifications as to details of construction of the apparatus for carrying out my invention can be made without departing from the spirit or scope of the same.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An apparatus for ordering tobacco, comprising a housing provided with a central chamber within which is created a humid atmosphere by the spraying of water into air, side chambers provided with top and bottom barriers connected with said central chamber so that the humid air conveyed from said central chamber may be absorbed by the tobacco in said side chambers, suction means in said central chamber for causing the air deprived of its humidity to be withdrawn between the top barriers of said chambers and to be presented to an atmosphere adapted to revivify the same in said central chamber and to be conveyed again into the tobacco side chambers to effect uniform ordering thereof, substantially as and for the purposes described.

2. An apparatus for ordering tobacco, comprising a housing provided with a central chamber having agitating and atomizing appliances therein, top and bottom chambers in communication with said central chamber and with side chambers having the roof and bottom of each of them provided with [illegible] and means for actuating said agitating and atomizing appliances so as to cause a circulation and recirculation of humid air [illegible] purposes described.

3. An apparatus for ordering tobacco, comprising a housing provided with a [illegible]

tion to the tobacco to completely order the same. It will be observed, [illegible] the circulation of the humid air is continuous, and also that it may be made more or less vigorous, according as the speed of the fans or agitating devices C are increased or decreased. Again these devices are the means for forcing the humid air continuously by circulation and recirculation through the apparatus into the presence of the tobacco suspended in certain of the chambers of the apparatus, aided by suction.

The slatted bottom frames or trucks of the apparatus can be removed with the tobacco supported thereon through doors to be provided in the walls of the housing A.

Any water in bead or drop form carried by the air in the central chamber B and thrown against the partitions b and b' will drip into an annular trough h in the lower part thereof, as clearly shown in Fig. 1. This trough h may be provided with a strip of burlap or other suitable material h^1, depending therefrom into a pan or drip-receptacle h^2, as clearly illustrated in Fig. 1 of the drawings, and provided with a loose cover or strip of burlap or other absorbent material h^3, spread over the said pan, whereby through capillary attraction beads or drops of water liberated from the air and falling in the mixing and agitating chamber B will ultimately find their way into the pan or drip-receptacle h^2, and may be removed therefrom through an outlet in the bottom of the pan. (Not shown.)

The arrangement of the apparatus described for the carrying out of the invention, as hereinbefore explained, is such as to permit of great uniformity of action of the moist air among and upon the confined tobacco, so that absorption of the moisture of the air by the tobacco is very evenly accomplished throughout in the tobacco-chambers of the apparatus. This was not the case with apparatus as hitherto employed, because the [illegible] and drawn off in the volume at an opposite point for being [illegible], occasioning by such arrangement undue wetting of the tobacco exposed to the influence of the volume of such air with an serious consequence of the rotting of the tobacco [illegible] becoming moldy, and thus unsuitable or unfit for subsequent use, because when removed from the ordering-chambers it had to in bulk be "drawn" in order as nearly as possible by diffusion to bring it to a state of some uniformity, but then had to be picked before "prizing" or pressing for the storage thereof. Again in removing it has been found to be either too wet to be stored or else too dry.

In the practice of the present invention

dering, and the [illegible] such an atmosphere is fully carried out, so that prizing of the same for storage can be effected upon removal from the ordering-compartments without "bulking" or "picking" or the expense incident thereto.

It will be manifestly obvious to those skilled in the art to which my invention appertains, as extended practice thereof has demonstrated, that modifications as to details of construction of the apparatus for carrying out my invention can be made without departing from the spirit or scope of the same.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An apparatus for ordering tobacco, comprising a housing provided with a central chamber within which is created a humid atmosphere by the spraying of water into air, side chambers provided with top and bottom barriers connected with said central chamber so that the humid air conveyed from said central chamber may be absorbed by the tobacco in said side chambers, suction means in said central chamber for causing the air deprived of its humidity to be withdrawn between the top barriers of said chambers and to be presented to an atmosphere adapted to revivify the same in said central chamber and to be conveyed again into the tobacco side chambers to effect uniform ordering thereof, substantially as and for the purposes described.

2. An apparatus for ordering tobacco, comprising a housing provided with a central chamber having agitating and atomizing appliances therein, top and bottom chambers in communication with said central chamber and with side chambers having the roof and bottom of each of them provided with [illegible] and means for actuating said agitating and atomizing appliances so as to cause a circulation and recirculation of humid air [illegible] said chambers, substantially as and for the purposes described.

3. An apparatus for ordering tobacco, comprising a housing provided with a central chamber, side chambers provided with slatted roofs, top and bottom chambers, means in said central chamber for creating and maintaining a humid atmosphere therein for presenting continuously to tobacco in said side chambers to dampen and order the same, and a movable frame or truck having slatted bottoms mounted in said side chambers, substantially as and for the purposes described.

4. An apparatus for ordering tobacco, comprising a housing provided with a central chamber having atomizing and agitating appliances therein, side chambers adapted for

suspending tobacco therein, top and bottom chambers connected with said central chamber and in communication with said side chambers, provided with slatted bottoms and roofs for momentarily confining moist air in said chambers, a trough having absorbent material, a pan or drip receptacle in said central chamber and provided with a cover of absorbent material, and means for actuating said atomizing and agitating appliances, substantially as and for the purposes described.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.

JOSIAH K. PROCTOR.

Witnesses:
THOMAS M. SMITH,
RICHARD C. MAXWELL.

1074

(No Model.) 3 Sheets—Sheet 1.

C. F. WINKLER.

INCUBATOR.

No. 286,7[illegible]. Patented Oct. 16, 1883.

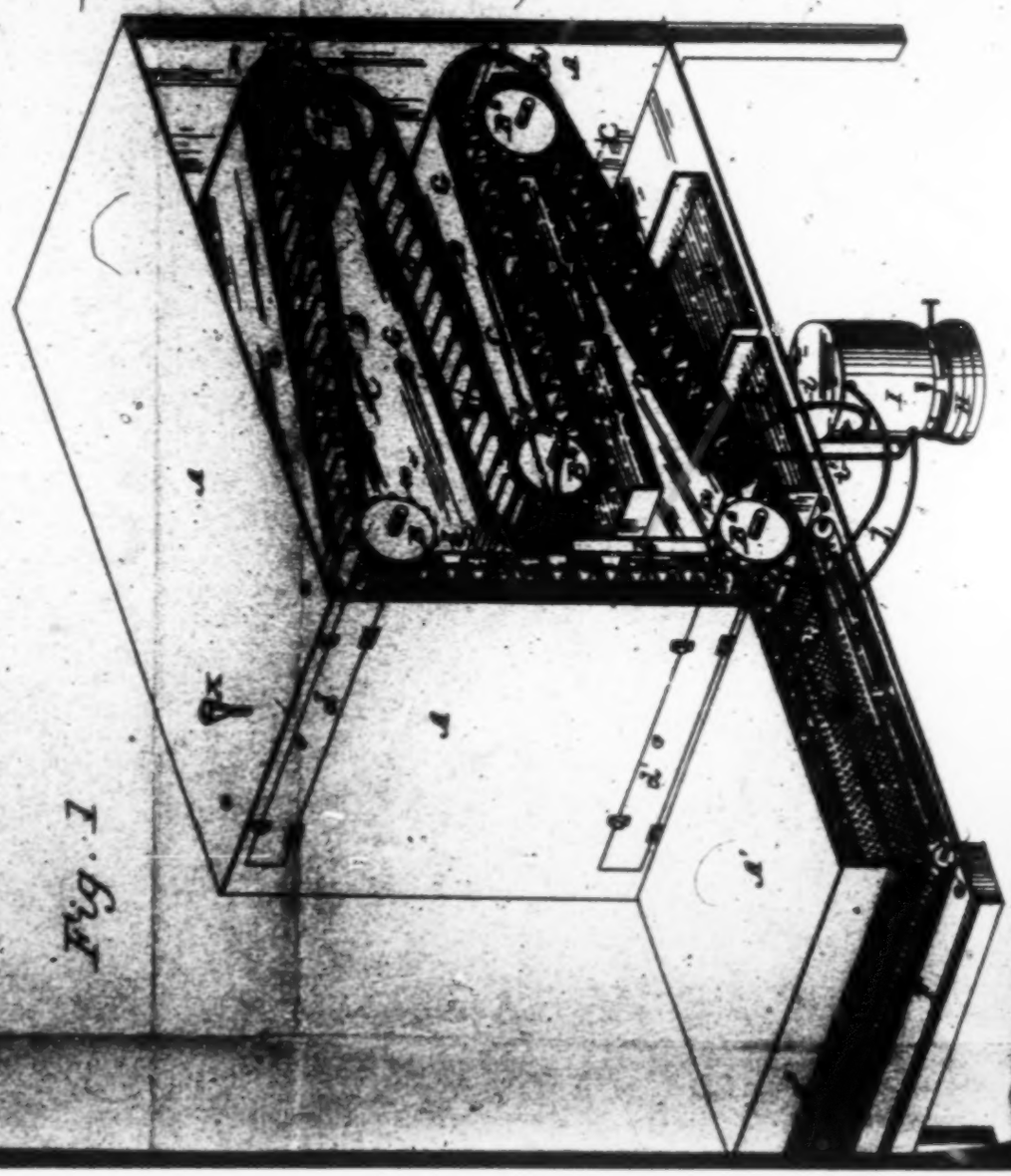


Fig. 1

No. 286,756. Patented Oct. 16, 1883.

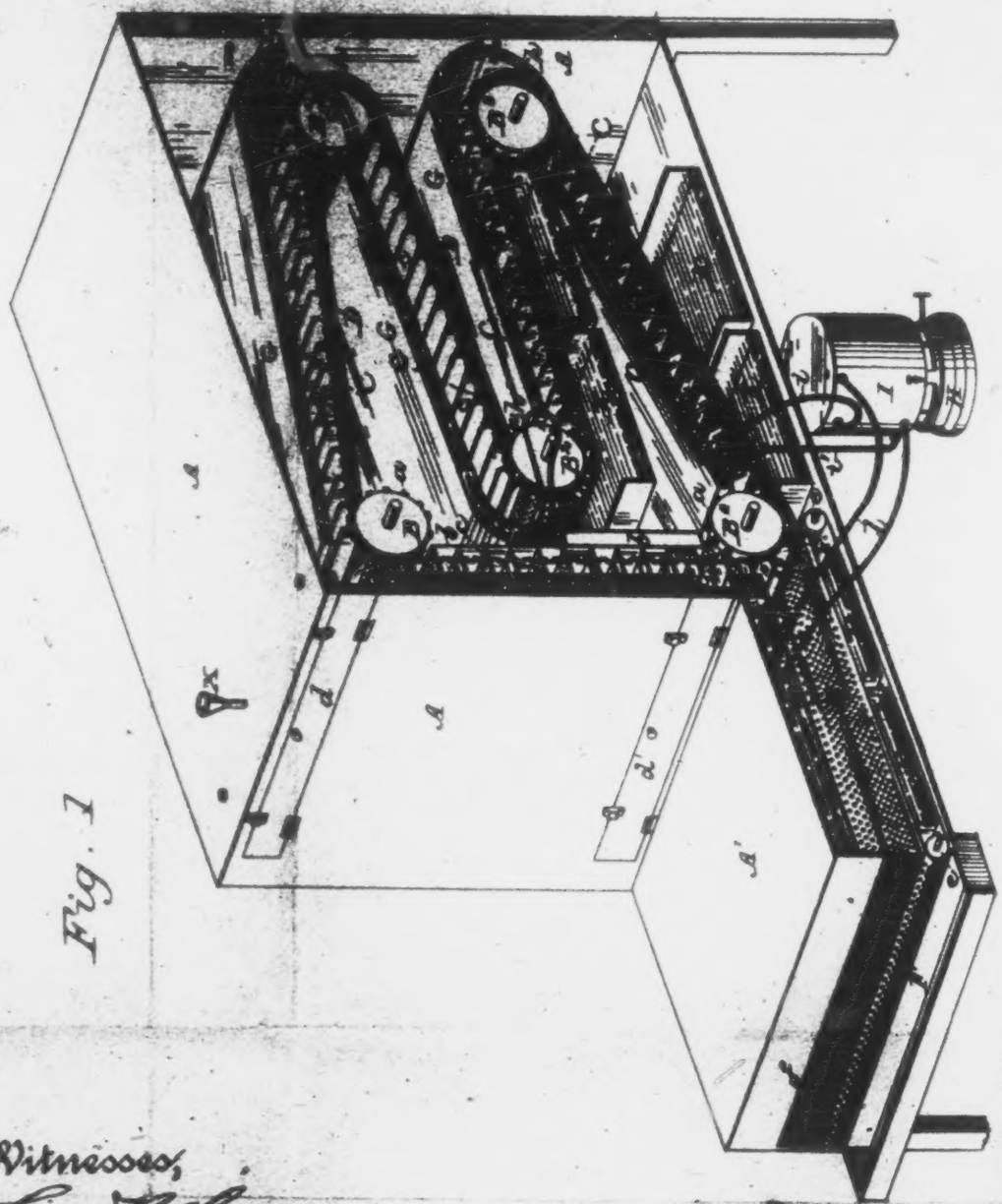


Fig. 1

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J. A. Stowe

Inventor,
C. F. Winkler
by Dewey & Co.
Attorneys

1075

(No Model.) 3 Sheets—Sheet 2

C. F. WINKLER.

INCUBATOR.

No. 286,750. Patented Oct. 16, 1883.

Fig. 2.

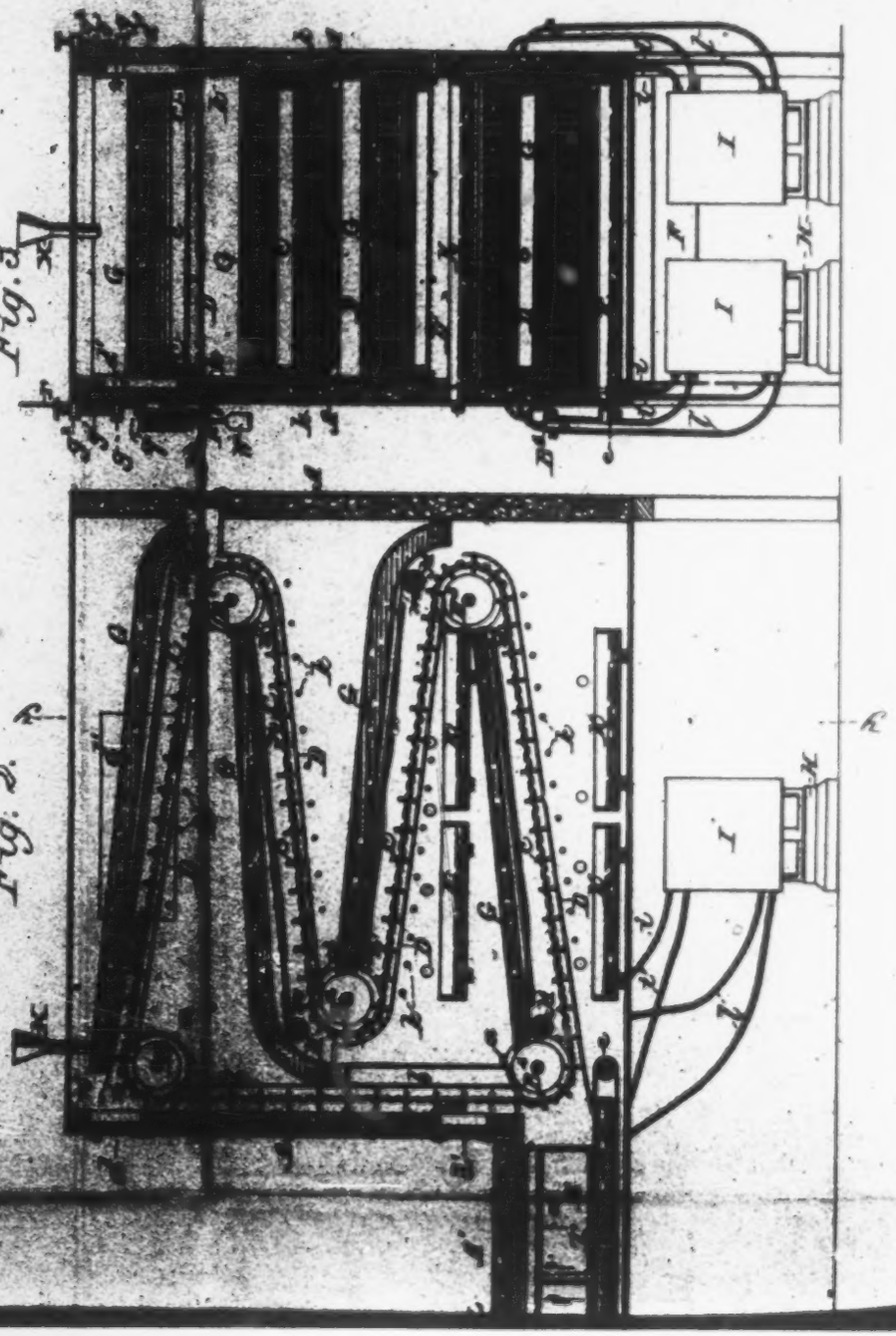
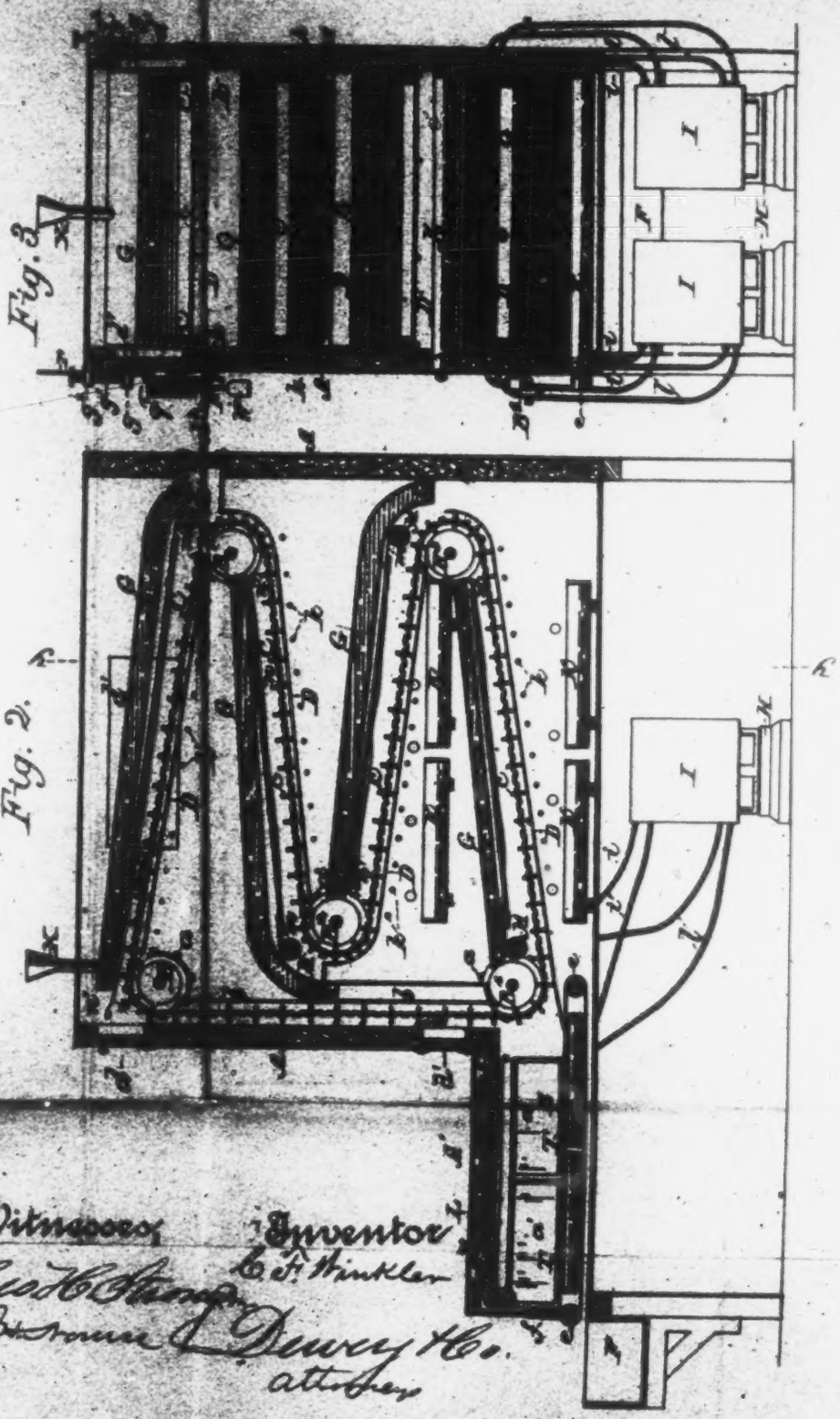


Fig. 3.

No. 286,76[illegible]. Patented Oct. 16, 1883.



Witnesses, Inventor
C. F. Winkler
Geo. H. Strong
Jas. Nourse
L. Dewey & Co.
attorneys

1076

(No Model.) 3 Sheets—Sheet 3.

C. F. WINKLER.

INCUBATOR.

No. 286,756. Patented Oct. 16, 1883.

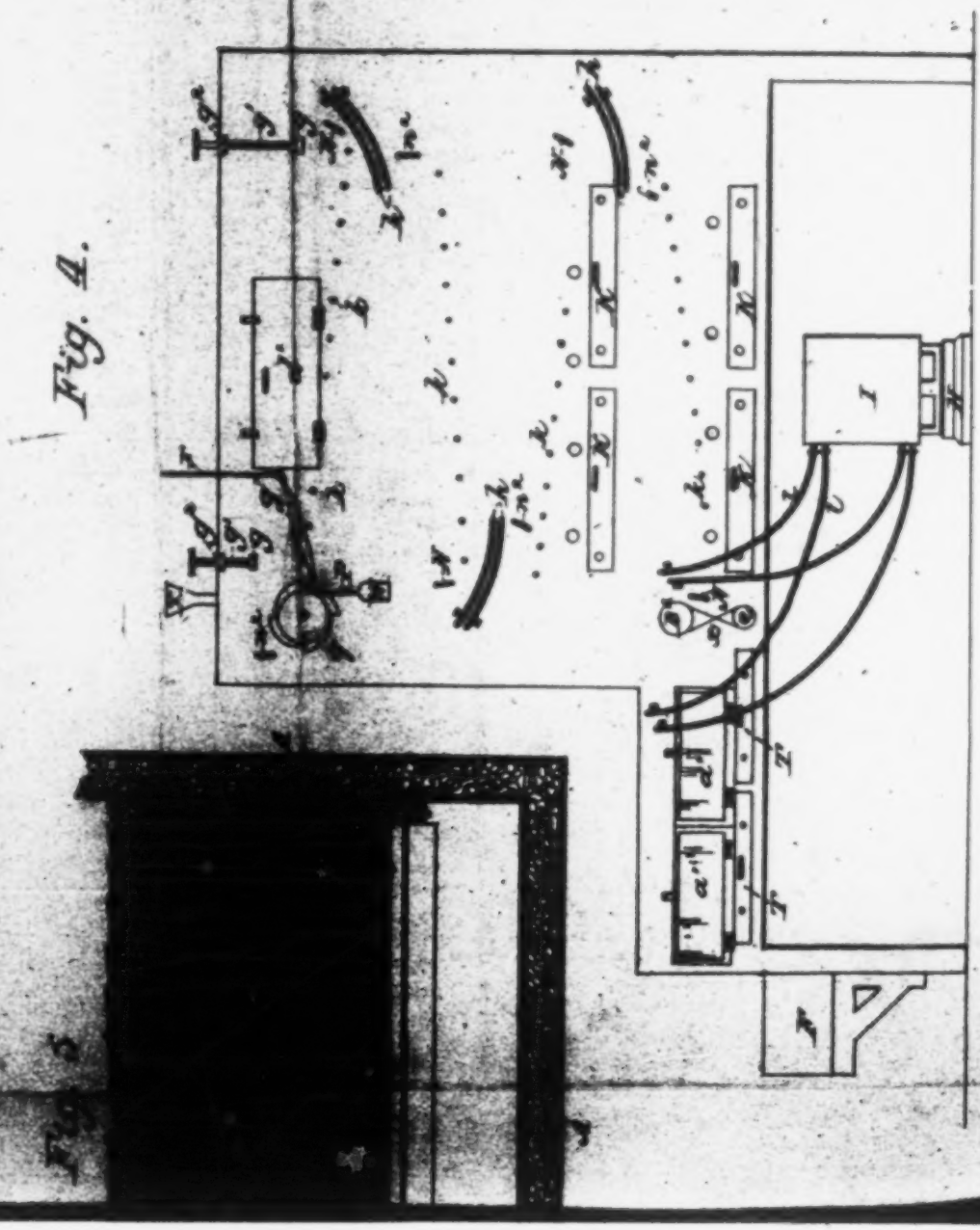


Fig. 4.

No. 286,756. Patented Oct. 16, 1883.

Fig. 4.

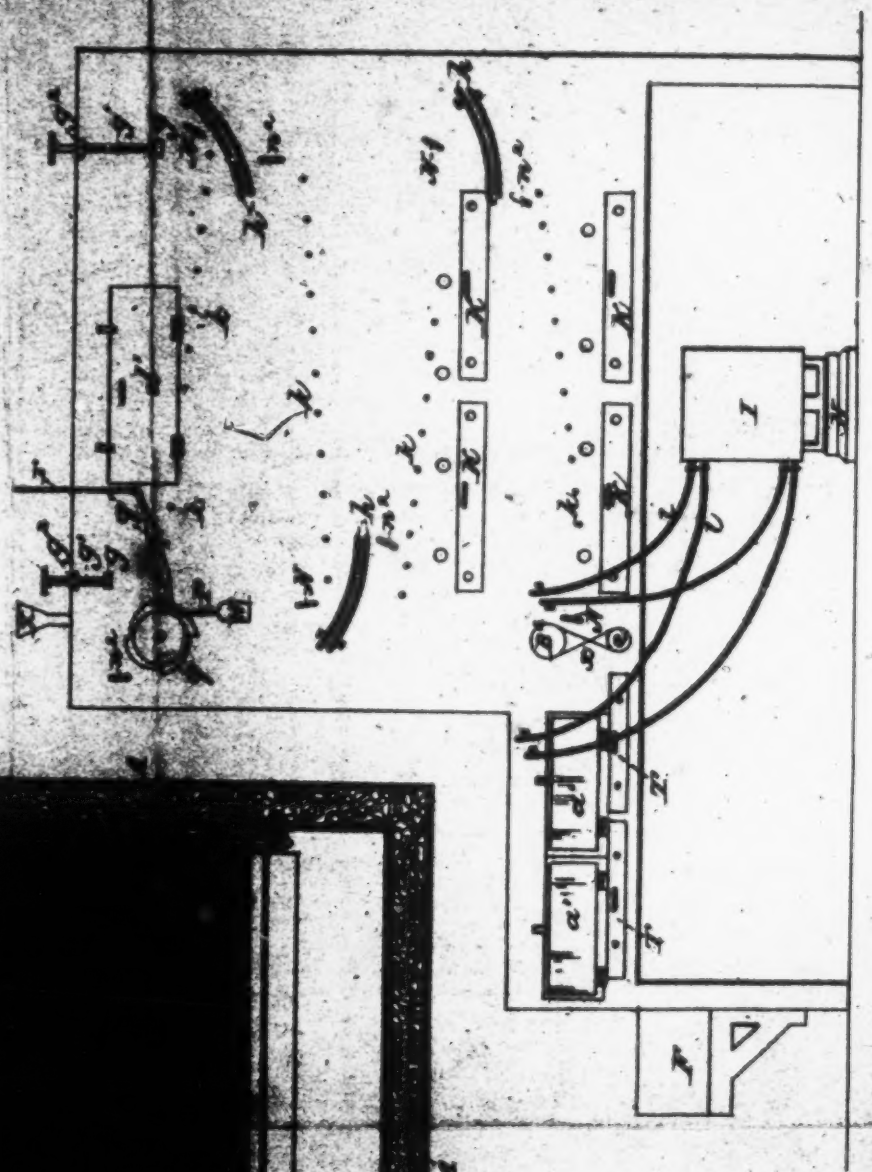


Fig. 5

Witnesses, Inventor
C. F. Winkler
Geo. H. Strong
Lawrence Dewey & Co.
attorneys

UNITED STATES PATENT OFFICE.

CHARLES F. WINKLER, OF BAKERSFIELD, CALIFORNIA

INCUBATOR.

SPECIFICATION forming part of Letters Patent No. 286,755, dated October 16, 1883.

Application filed May 17, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. WINKLER, of Bakersfield, county of Kern, State of California, have invented an Improvement in an Incubator; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to certain new and useful improvements in the class of incubators employing an endless traveling conveyor for receiving and advancing the eggs; and the invention consists in novel features of construction and combination of parts, all as will be hereinafter fully described, and set forth in the claims hereto annexed.

The object I have in view in this invention is to overcome certain patent difficulties which attend the operation of machines now in use. A brief recital of these will serve to explain more clearly my object. During the progress of incubation the temperature must vary. At the beginning the eggs require a greater heat than at the close, because toward the end the embryo, having increased, furnishes a certain amount of heat for itself. For this reason the temperature produced by the apparatus should be gradually decreased during the process. This necessitates the complete charging of the incubator at the start. One lot of eggs cannot be introduced to-day and another in a week, because the temperature would be unsuitable for either one lot or the other. In large [illegible] of eggs at [illegible] ed as to allow the introduction of a fresh lot of eggs at [illegible] and given to each [illegible] temperature. This entails [illegible] or, if allowed to remain, the young, in struggling about while still wet, smear the unhatched eggs and prevent their hatching; or they injure themselves on the broken shells or in the interstices between the eggs. My machine hatches them in small batches removed from the unhatched eggs, so that the temperature is not lowered by removing them, nor are they injured, nor do they injure the other eggs. Again, the ordinary machines are not adapted for all kinds of eggs, (geese, turkey, duck, and chicken eggs placed therein promiscuously,) because these having different periods of incubation, the periods of temperature for one kind will not answer for another. My machine provides for this, so that I am enabled to place all kinds of eggs and give to each its required period and temperature. These are some of the difficulties which I overcome. The various other and minor advantages which I gain will appear during the course of the following description of the construction, which will be clearly seen by reference to the accompanying drawings, in which—

Figure 1, Sheet 1, is a perspective view of my machine, having one of its sides removed to show the interior. Fig. 2, Sheet 2, is a vertical longitudinal section of same. Fig. 3 is a cross-section on line *y y*, Fig. 2. Fig. 4, Sheet 3, is a side elevation of same. Fig. 5 is a portion of a plan, showing the conveyer.

A is the casing of the machine, having double [illegible] with some non-conduct- [illegible] over its [illegible] to the sides of [illegible] tank. B is a [illegible] and a little [illegible] [illegible] mounted in the [illegible] and a little farther in.

CHARLES F. WINKLER, OF BAKERSFIELD, CALIFORNIA

INCUBATOR.

SPECIFICATION forming part of Letters Patent No. 266,756, dated October 16, 1883.

Application filed May 17, 1882. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. WINKLER, of Bakersfield, county of Kern, State of California, have invented an Improvement in an Incubator; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to certain new and useful improvements in the class of incubators employing an endless traveling conveyer for receiving and advancing the eggs; and the invention consists in novel features of construction and combination of parts, all as will be hereinafter fully described, and set forth in the claims hereto annexed.

The object I have in view in this invention is to overcome certain patent difficulties which attend the operation of machines now in use. A brief recital of these will serve to explain more clearly my object. During the progress of incubation the temperature must vary. At the beginning the eggs require a greater heat than at the close, because toward the end the embryo, having increased, furnishes a certain amount of heat for itself. For this reason the temperature produced by the apparatus should be gradually decreased during the process. This necessitates the complete charging of the incubator at the start. One lot of eggs cannot be introduced to-day and another in a week, because the temperature would be unsuitable for either one lot or the other. In large machines this immediate and large collection of eggs presents the difficulty of getting them fresh enough, or requires an outlay of money. My machine is so constructed as to allow the introduction of a fresh lot of eggs at short intervals, and gives to each lot its own required temperature. This enables me to use successively perfectly fresh eggs without trouble, and makes the process continuous, which is a very desirable result in poultry-raising. Again, when all the eggs have reached an equal stage, and the young begin to come out, they are all crowded in the same apartment, or many are in several chambers. They hatch practically simultaneously, so that a great many are always wet. This necessitates the constant opening of the doors to remove them, which, by lowering the temperature, affects injuriously the other eggs; or, if allowed to remain, the young, in struggling about while still wet, smear the unhatched eggs and prevent their hatching; or they injure themselves on the broken shells or in the interstices between the eggs. My machine hatches them in small batches removed from the unhatched eggs, so that the temperature is not lowered by removing them, nor are they injured, nor do they injure the other eggs. Again, the ordinary machines are not adapted for all kinds of eggs, (goose, turkey, duck, and chicken eggs placed therein promiscuously,) because these having different periods of incubation, the periods of temperature for one kind will not answer for another. My machine provides for this, so that I am enabled to place all kinds of eggs and give to each its required period and temperature. These are some of the difficulties which I overcome. The various other and minor advantages which I gain will appear during the course of the following description of the construction, which will be clearly seen by reference to the accompanying drawings, in which—

Figure 1, Sheet 1, is a perspective view of my machine, having one of its sides removed to show the interior. Fig. 2, Sheet 2, is a vertical longitudinal section of same. Fig. 3 is a cross-section on line *y y*, Fig. 2. Fig. 4, Sheet 3, is a side elevation of same. Fig. 5 is a portion of a plan, showing the conveyer.

A is the casing of the machine, having double-spaced walls filled with some non-conducting material.

B is a hollow drum perforated over its surface, and mounted transversely in the sides of the machine near its top at one end. B' is a similar drum, mounted in the other end and a little lower down. B² is a drum mounted in the first end, lower down and a little farther in. B³ is a drum at the other end, and B⁴ a drum at the bottom in the first end.

C C are endless chains passing over the ends of the drums, and following a course from B down to and around B', to and around B², to and around B³, to and around B⁴, and up vertically behind an inner wall *b*, to the point of beginning. The ends of the drums are provided with teeth or plates, similar to a sprocket pulley, for engaging with the links of the chains and [illegible] a positive motion there-

for. On account of the position of the drums the course of the chains is inclined downwardly to drum B^4. Secured at short intervals in the chains are the tranverse slats *c*, which form a conveyer, as I shall explain. These slats are secured to the chains at the middle line of their ends, thus making half the width of the slat below and half above the chains, for the reason that in turning around the drums they become reversed edge for edge. These slats travel over flooring D. This may consist of any perforated material, wire screen being preferable, to permit ventilation. This flooring is in sections, the uppermost piece lying between the drums B B′, the next between drums B′ B^2, and so on down. The top section is straight; but the others are bent around the upper drum of each, following its curvature to a point above its center, in order to receive and guard the eggs when traveling around the drum, and to keep them to their places between the slats. The lowest of these flooring-sections opens down upon an endless perforated belt or carrier, E, placed in a horizontal plane, and traveling over rollers *e* within an extension, A′, of the main casing A.

I shall now explain the operation and advantages of the devices as far as described.

In one end of the machine, at its top, is a door, *d*, another, *d′*, in its sides, below the former, and another, d^2, in its other end. The conveyer, consisting of the chains and slats, travels downward at certain times by means which I shall hereinafter describe. The length of the belt and the distances of its periodical progression are so regulated that from the point where a slat, *c*, passes the door d^2 to the point where it turns and begins to ascend will be about nineteen days. This period covers the time during which it is found necessary to turn chicken-eggs. From the point where the conveyer passes the door *d′* to the lowest point, the period is from twenty-five to twenty-eight days, and from the very top at door *d* to to bottom it is about thirty days. These periods cover the time necessary for turning other than chicken-eggs. The eggs are placed between the slats *c* and rest upon the floors D. The chicken-eggs are placed into the conveyer through the door d^2, the duck and turkey eggs through the door *d′*, and the goose-eggs through door *d*. Knowing the times at which the conveyer is advanced its set distance, I am ready with a fresh lot of eggs to put through the advances at one time is regulated to turn them a quarter or a half a turn, as the case may be. The curved ends of the floor-sections D receive the eggs as they come around the drums. When they reach the bottom the chicks will have picked the shells, and the eggs must not thereafter be turned. This is the object of the horizontal traveling carrier E. This carrier is advanced at intervals at such a rate that it may take, say, about three days to reach the end. The eggs do not roll on the carrier, but are advanced. The chicks come out, and are removed through side doors, *a′*, while the shells and bad eggs continue, and are discharged through the open end of the extension A′ into a receptacle, F. The end of the extension is preferably covered by a fringe, *f*. It will be observed that the place in which the chicks are hatched is sufficient in area not to be crowded, thereby giving the chicks a fair chance, and they are sufficiently removed from the other eggs yet in process to prevent injury to them.

I shall now describe the means by which I obtain the desired temperature.

Over the conveyer, above all its folds and following its inclination, are the sections of water-jacket G. These are independent of each other, and are suspended at their ends by means of blocks *g*, projecting through slots in the casing A, and the screws *g′*, attached at their lower ends to the blocks *g*, and passing vertically through suitable holes in the blocks g^2, Fig. 4. By turning these screws each section of water-jacket may be raised or lowered independently. The ends of these sections are curved, where necessary, to follow the course of the conveyer, and they are preferably tapered to their upper ends, in order to reduce their thickness and provide for a greater vertical play in small space. The ends of the sections of water-jacket G are connected with each other by two flexible pipes, *h*. Of these one joins the bottoms of the jackets and the other the tops, whereby the free circulation of the hot and cold water is permitted. Under the machine are the coal-oil stoves H, having the boilers I. From the tops of these boilers extend flexible pipes *i* to the upper portion of the lower end of the lowest section of water-jacket G. Flexible pipes *i′* join the bottoms of the boilers with the lower portion of said sections. These connecting-pipes, being flexible, permit the adjustment of each section of

below and half above the chains, for the reason that in turning around the drums they become reversed edge for edge. These slats travel over flooring D. This may consist of any perforated material, wire screen being preferable, to permit ventilation. This flooring is in sections, the uppermost piece lying between the drums B B', the next between drums B' B², and so on down. The top section is straight; but the others are bent around the upper drum of each, following its curvature to a point above its center, in order to receive and guard the eggs when traveling around the drum, and to keep them to their places between the slats. The lowest of these flooring-sections opens down upon an endless perforated belt or carrier, E, placed in a horizontal plane, and traveling over rollers *e* within an extension, A', of the main casing A.

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In one end of the machine, at its top, is a door, *d*, another, *d'*, in its sides, below the former, and another, *d²*, in its other end. The conveyer, consisting of the chains and slats, travels downward at certain times by means which I shall hereinafter describe. The length of the belt and the distances of its periodical progression are so regulated that from the point where a slat, *c*, passes the door *d²* to the point where it turns and begins to ascend will be about nineteen days. This period covers the time during which it is found necessary to turn chicken eggs. From the point where the conveyer passes the door *d'* to the lowest point, the period is from twenty-five to twenty-eight days, and from the very top at door *d* to to bottom it is about thirty days. These periods cover the time necessary for turning other than chicken-eggs. The eggs are placed between the slats *c* and rest upon the floors D. The chicken-eggs are placed into the conveyer through the door *d'*, the duck and turkey eggs through the door *d²*, and the goose-eggs through door *d*. Knowing the times at which the conveyer is advanced its set distance, I am ready with a fresh lot of eggs to put through the doors into the slats which are within reach. At the next time, these eggs have been carried forward and empty slats presented, into which I put another lot, and so on. In this way I put in, at short intervals, a limited number. The eggs being discharged below, the slats ascend empty, and the operation is continuous. The turning of the eggs is entirely automatic, for the reason that they rest on a stationary downwardly-inclined floor, and are advanced by the traveling slats, between which they lie. They thus roll, and the distance which the conveyer horizontal traveling carrier E. This carrier is advanced at intervals at such a rate that it may take, say, about three days to reach the end. The eggs do not roll on the carrier, but are advanced. The chicks come out, and are removed through side doors, *d³*, while the shells and bad eggs continue, and are discharged through the open end of the extension A' into a receptacle, F. The end of the extension is preferably covered by a fringe, *f*. It will be observed that the place in which the chicks are hatched is sufficient in area not to be crowded, thereby giving the chicks a fair chance, and they are sufficiently removed from the other eggs yet in process to prevent injury to them.

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Over the conveyer, above all its folds and following its inclination, are the sections of water-jacket G. These are independent of each other, and are suspended at their ends by means of blocks *g*, projecting through slots in the casing A, and the screws *g'*, attached at their lower ends to the blocks *g*, and passing vertically through suitable holes in the blocks *g'*, Fig. 4. By turning these screws each section of water-jacket may be raised or lowered independently. The ends of these sections are curved, where necessary, to follow the course of the conveyer, and they are preferably tapered to their upper ends, in order to reduce their thickness and provide for a greater vertical play in small space. The ends of the sections of water-jacket G are connected with each other by two flexible pipes, *h*. Of these one joins the bottoms of the jackets and the other the tops, whereby the free circulation of the hot and cold water is permitted. Under the machine are the coal-oil stoves H, having the boilers I. From the tops of these boilers extend flexible pipes *i* to the upper portion of the lower end of the lowest section of water-jacket G. Flexible pipes *i'* join the bottoms of the boilers with the lower portion of said sections. These connecting-pipes, being flexible, permit the adjustment of each section of water-jacket. It is through the means of this adjustment that I obtain the required heat in all stages of the operation. As hot water rises to the top, it will be found that the upper section of water-jacket will be the hottest, and so on down, and as greater heat is required at the beginning of the process, this is the suitable condition. After the machine has been set up and tested, it will readily be seen what difference in temperature exists between each of the sections. Then by vertically adjusting the sections they may be brought in close

jmity to or farther from the eggs, in order to give them the heat required at whatever stage of the process they may be. In like manner, the adjustment of one end of a section will provide for any change in temperature which may be required in the extent of one fold of the conveyer.

X is the funnel, through which the water-jacket and boilers are filled. Small holes *k* through the sides of the casing A provide for the admission of fresh air under the perforated floor-sections. Under the lower two floor-sections I have the water-trays K, to provide moisture during the later stages of the process, when it is most needed. Over the horizontal carrier E, I have a separate water-jacket, L, which is connected with the top and bottom of boiler by pipes *l*. The heat of this is regulated to give the required temperature during the very latest stages of incubation.

The eggs require to be cooled about once a day. This I do by the following means: Mounted transversely in the casing over the bends or turns in the conveyer, and between it and the water-jackets, are rollers M, upon which are wound curtains *m*, of some kind of cloth or fabric. With the edges of these are connected strings *n*, which extend over the conveyer, and are wound on a shaft, *n'*, having crank *n²*. By winding these strings the curtains are unwound and lie over the eggs, shielding them from the heat. When sufficiently cool, they are wound back upon their rollers. This is done by small cranks N on their ends, though I may provide them with springs to operate automatically, as ordinary window-curtains work.

In Fig. 4 I show a portion of the means by which I cause the periodic advancement of the conveyer. The end of drum B, or a gudgeon thereon, projects through the side of the casing, and has a coril, P, wound thereon. This coril suspends a weight, W, which is sufficient, with the weight of the conveyer and its load, to cause said conveyer to advance with a positive motion. Upon the drum is a ratchet, [illegible] with which a pivoted latch, *g'*, engages. The upper arm of this latch is heavy enough to cause the point to engage with the ratchet and hold the drum stationary. The end of the latch is connected by a rod, *r*, with clock-work, which I have not deemed it necessary to show [illegible] at regular periods—say every six hours—

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an incubator, a conveyer for receiving the eggs, and means for advancing said conveyer periodically, in combination with heating devices arranged to give the heat requisite at all points during the progress of the eggs, substantially as and for the purposes herein described.

2. In an incubator, a conveyer for receiving the eggs, consisting of spaced slats, between which the eggs lie, and means for advancing it, in combination with an inclined floor, down which the conveyer travels and upon which the eggs rest, whereby they turn with the advancement of the conveyer and their own progress, substantially as and for the purposes herein described.

3. In an incubator, the drums B, B', B², B³, and B⁴, having teeth *a*, the endless chain C C, having spaced cross-slats *c*, and a means for advancing said chains and slats, in combination with the perforated floor-sections D, over which the slats travel, substantially as and for the purpose herein described.

4. In an incubator, the hollow perforated drums B, B', B², B³, and B⁴, having teeth *a*, the endless chains C C, having spaced cross-slats *c*, and a means for advancing said chains and slats, in combination with the perforated floor-sections D, having their upper ends concentric with the drums for a short distance, substantially as and for the purpose herein described.

5. In an incubator, the casing A, having doors *d d' d²*, in combination with the endless egg-conveyer consisting of the endless chains C C and cross-slats *c*, passing said doors, and a means for advancing said conveyer, substantially as and for the purpose herein described.

6. In an incubator, the drums B B' B² B³ B⁴, the endless chains C C and spaced slats *c*, and means for advancing said chains and slats, and the perforated floor-sections D, in combination with the water-jackets G, placed over the slats, and means for heating the water therein, substantially as and for the purpose herein described.

7. In an incubator, the drums B B' B² B³ B⁴, the endless chains C C and spaced slats *c*, and means for advancing said chains and slats, and the perforated floor-sections D, in combina-

conveyer.

X is the funnel, through which the water-jacket and boilers are filled. Small holes *z* through the sides of the casing A provide for the admission of fresh air under the perforated floor-sections. Under the lower two floor-sections I have the water-trays K, to provide moisture during the later stages of the process, when it is most needed. Over the horizontal carrier E, I have a separate water-jacket, L, which is connected with the top and bottom of boiler by pipes *l*. The heat of this is regulated to give the required temperature during the very latest stages of incubation.

The eggs require to be cooled about once a day. This I do by the following means: Mounted transversely in the casing over the bends or turns in the conveyer, and between it and the water-jackets, are rollers M, upon which are wound curtains *m*, of some kind of cloth or fabric. With the edges of these are connected strings *n*, which extend over the conveyer, and are wound on a shaft, *n'*, having crank *n²*. By winding these strings the curtains are unwound and lie over the eggs, shielding them from the heat. When sufficiently cool, they are wound back upon their rollers. This is done by small cranks N on their ends, though I may provide them with springs to operate automatically, as ordinary window-curtains work.

In Fig. 4 I show a portion of the means by which I cause the periodic advancement of the conveyer. The end of drum B, or a gudgeon thereon, projects through the side of the casing, and has a cord, P, wound thereon. This cord suspends a weight, W, which is sufficient, with the weight of the conveyer and its eggs, to cause said conveyer to advance with a positive motion. Upon the drum is a ratchet, *p*, with which a pivoted latch, *q*, engages. The outer arm of this latch is heavy enough to cause its point to engage with the ratchet and hold the drum stationary. The end of the latch is connected by a rod, *r*, with clock-work, which I have not deemed it necessary to show in detail. At stated periods—say every six hours—the clock-work raises rod *r*, withdrawing the latch from the ratchet momentarily. The drum then turns, advancing the conveyer. The rod is immediately relieved, and the latch drops to engage with the next tooth of the ratchet and stop the conveyer. By regulating the diameter of this ratchet the advancement of the conveyer is rendered definite. Between the top and bottom of the horizontal carrier E are water-trays T, for supplying moisture. In order to impart a forward motion to the horizontal carrier E, I have the cross-belt *s*, Fig. 1, from the drum B' to one of the rollers *e*.

ing devices arranged to give the heat requisite at all points during the progress of the eggs, substantially as and for the purposes herein described.

2. In an incubator, a conveyer for receiving the eggs, consisting of spaced slats, between which the eggs lie, and means for advancing it, in combination with an inclined floor, down which the conveyer travels and upon which the eggs rest, whereby they turn with the advancement of the conveyer and their own progress, substantially as and for the purposes herein described.

3. In an incubator, the drums B, B', B², B³, and B⁴, having teeth *a*, the endless chain C C, having spaced cross-slats *c*, and a means for advancing said chains and slats, in combination with the perforated floor-sections D, over which the slats travel, substantially as and for the purpose herein described.

4. In an incubator, the hollow perforated drums B, B', B², B³, and B⁴, having teeth *a*, the endless chains C C, having spaced cross-slats *c*, and a means for advancing said chains and slats, in combination with the perforated floor-sections D, having their upper ends concentric with the drums for a short distance, substantially as and for the purpose herein described.

5. In an incubator, the casing A, having doors *d d' d²*, in combination with the endless egg-conveyer consisting of the endless chains C C and cross-slats *c*, passing said doors, and a means for advancing said conveyer, substantially as and for the purpose herein described.

6. In an incubator, the drums B B' B² B³ B⁴, the endless chains C C and spaced slats *c*, and means for advancing said chains and slats, and the perforated floor-sections D, in combination with the water-jackets G, placed over the slats, and means for heating the water therein, substantially as and for the purpose herein described.

7. In an incubator, the drums B B' B² B³ B⁴, the endless chains C C and spaced slats *c*, and means for advancing said chains and slats, and the perforated floor-sections D, in combination with the superposed sections of water-jacket G, means for heating the water therein, and means for adjusting them vertically, substantially as and for the purpose herein described.

8. In an incubator, the tortuous conveyer consisting of the endless chains C C and cross-slats *c*, and means for advancing it, and the perforated floor-sections D, in combination with superposed sections of water-jacket G, means for vertically adjusting them independently, the flexible connecting-pipes *h*, the boilers I, and flexible connecting-pipes *i i'*, sub-

stantially as and for the purpose herein described.

9. In an incubator, the [illegible] conveyer, as herein described, and means for advancing it, in combination with the horizontal endless carrier E and means for [illegible], substantially as and for the purpose herein described.

10. In an incubator, the [illegible] conveyer consisting of the endless chains [illegible] and crossbars c, and means for advancing it, and the downwardly [illegible] sections D, upon which the [illegible] in combination with the horizontal endless carrier E and means for actuating it, substantially as and for the purpose herein described.

11. In an incubator, the [illegible] traveling conveyer, as herein described, in combination with the endless traveling carrier E, the superposed water-jacket G, the rollers I, and connecting [illegible], substantially as and for the purpose herein described.

12. In an incubator, the traveling conveyer, as herein described, and the superposed sections of water-jacket G, in combination with the intervening curtains, m, substantially as and for the purpose herein described.

13. In an incubator, the traveling conveyer, as herein described, and the superposed sections of water-jacket G, in combination with the rollers M, the curtains m thereon, and the draw-strings n, substantially as and for the purpose herein described.

14. In an incubator, the endless conveyer, as herein described, in combination with the means for advancing it periodically, consisting of the driving-drum B, the rope P, and weight W, and the holding mechanism consisting of the ratchet q and pivoted latch q', which are to be operated by a momentary releasing mechanism, substantially as and for the purpose herein described.

In witness whereof I have hereunto set my hand.

CHARLES F. WINKLER.

Witnesses:
WM. F. BOOTH,
J. H. BLOOD.

1081

(No Model.)

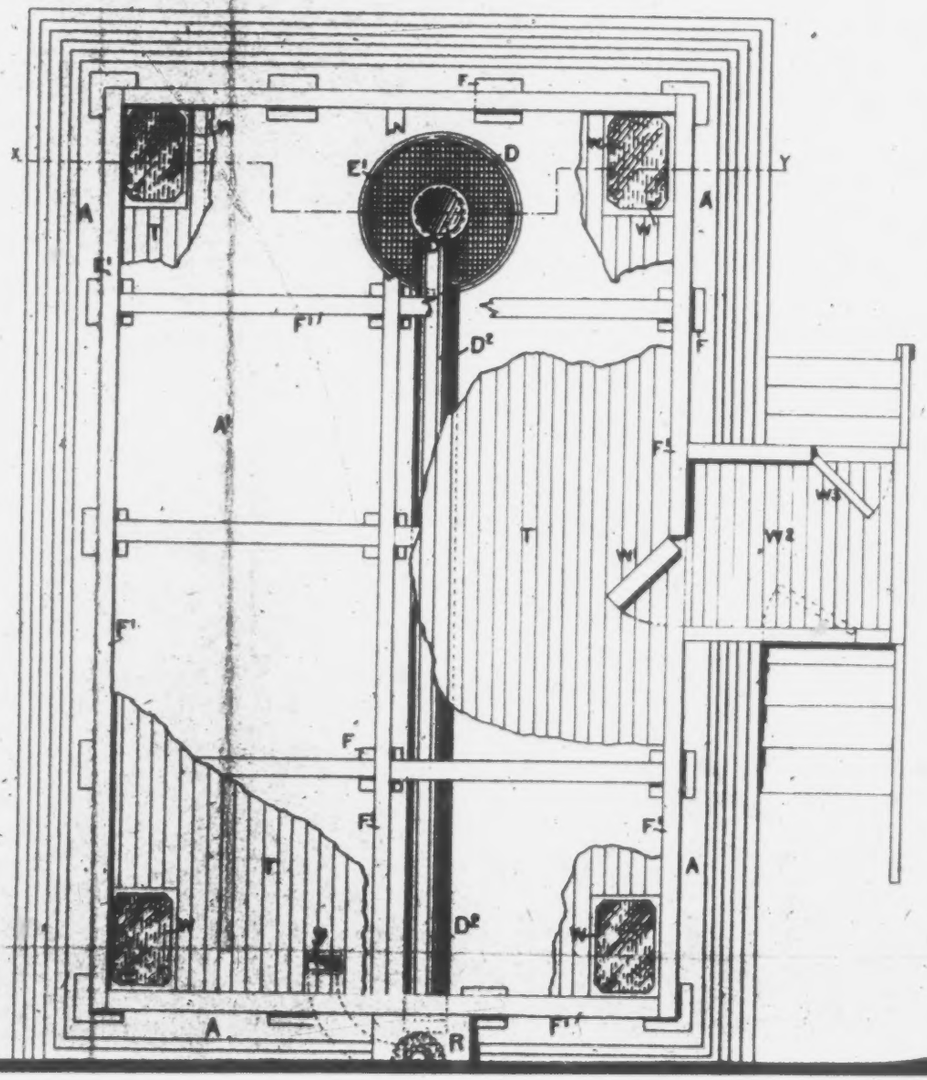
7 Sheets—Sheet 1.

W. VAN DER HEYDEN.

SANITARY HOUSE.

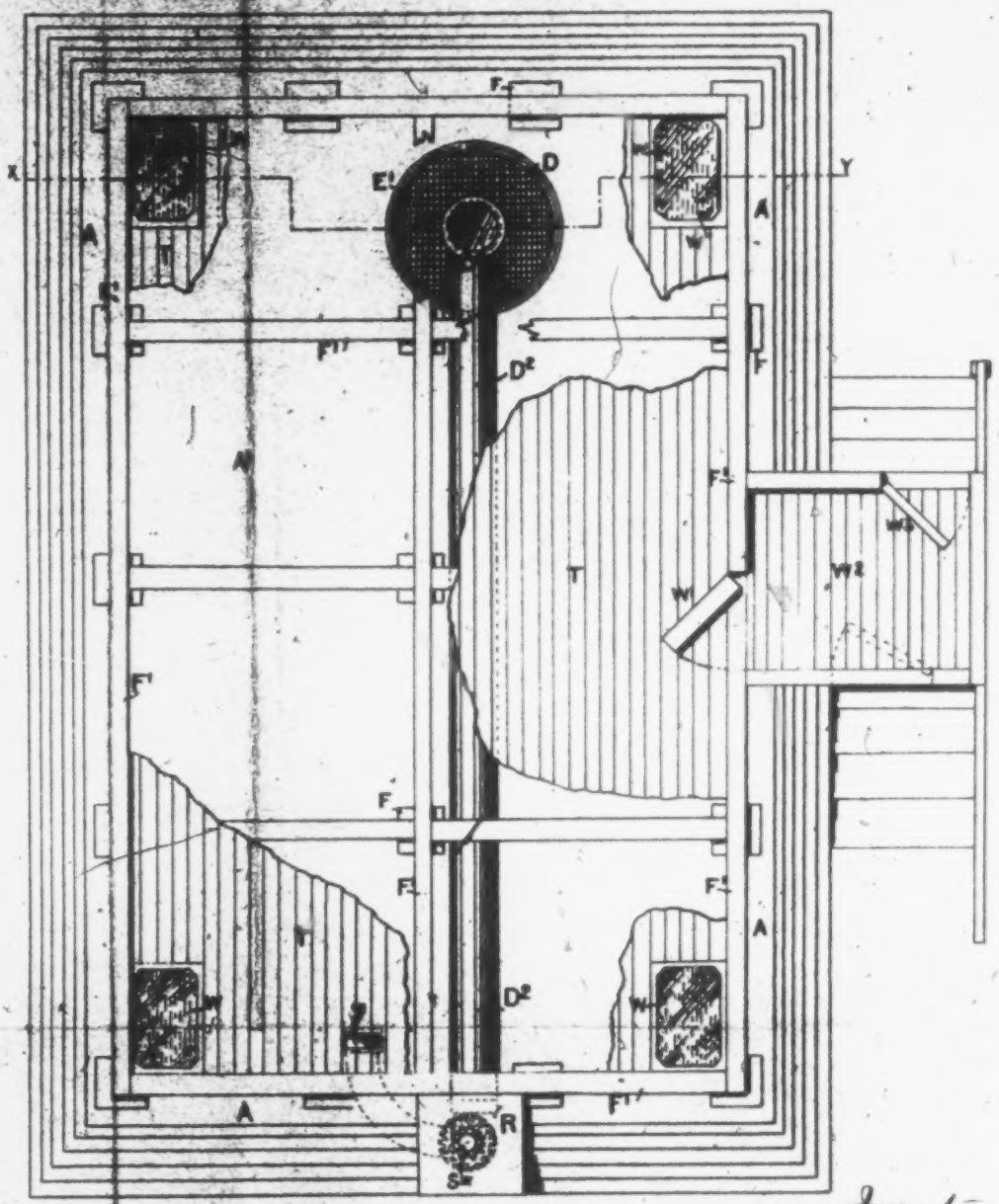
No. 504,544. Patented Sept. 5, 1893.

— FIG. I. —



No. 604,514. Patented Sept. 6, 1898.

— FIG. 1. —



Witnesses
Chas. N. Smith
J. Stair

Inventor
W. van der Heyden
per Lemuel W. Serrell
Atty

1082

(No Model.) 7 Sheets—Sheet 2.

W. VAN DER HEYDEN.

SANITARY HOUSE.

No. 504,544. Patented Sept. 5, 1893.

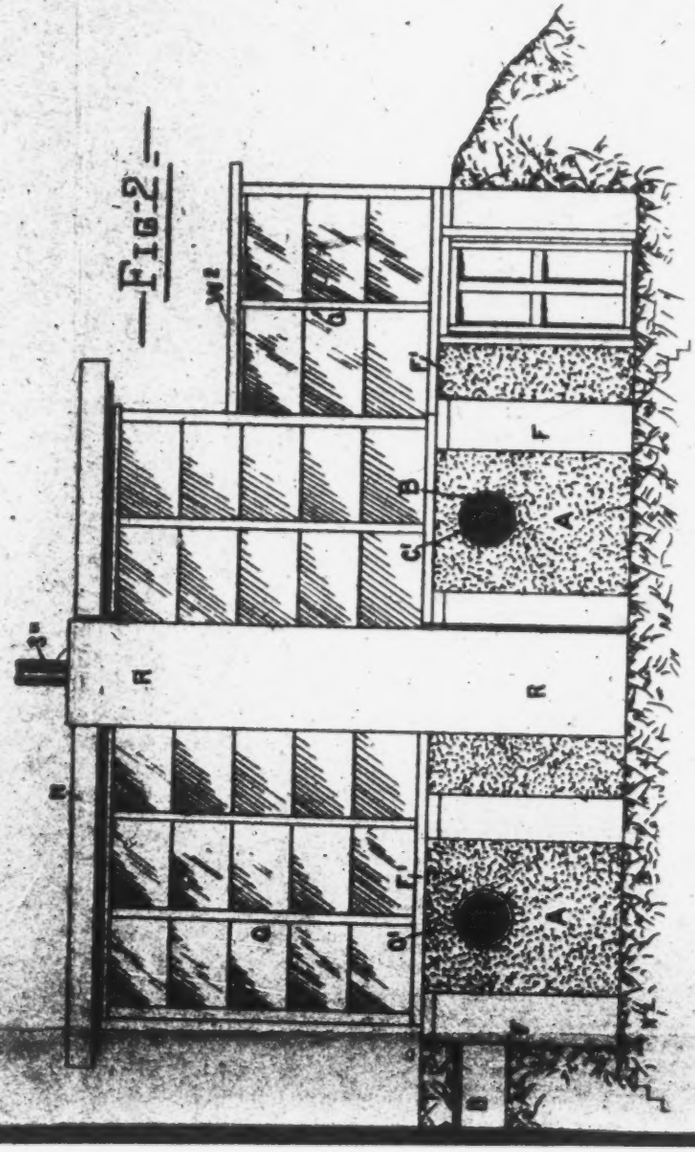
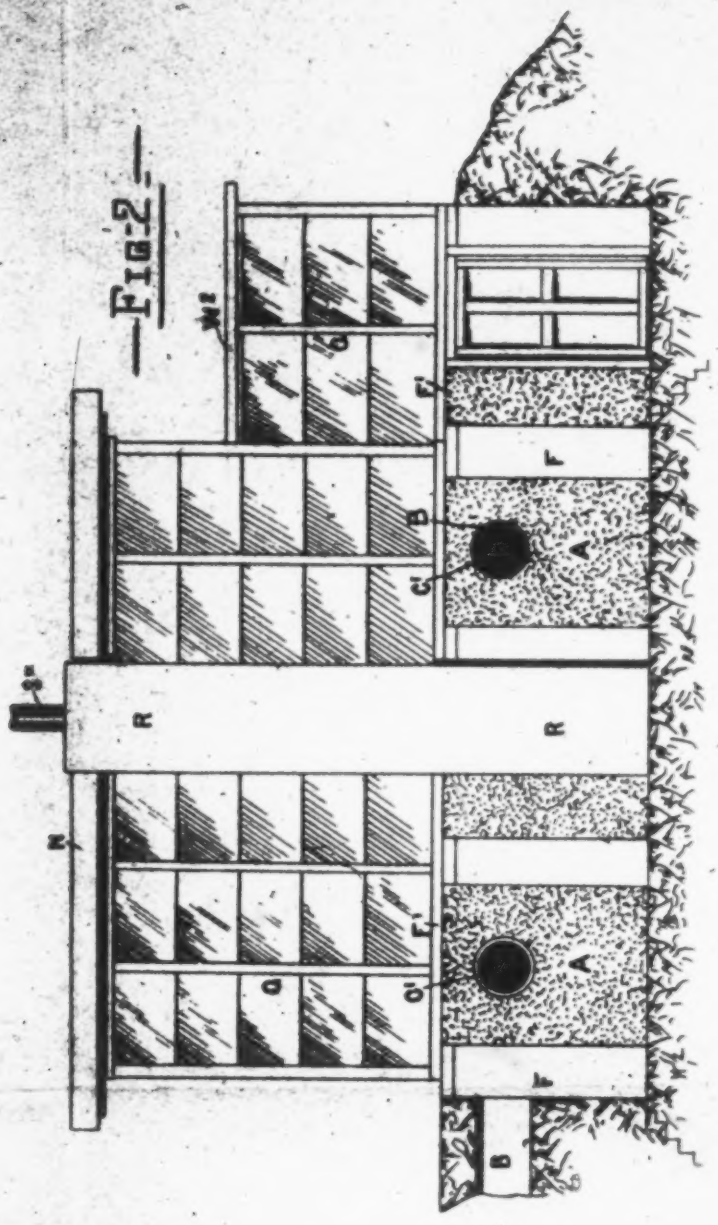


Fig-2



Witnesses
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Atty

1083

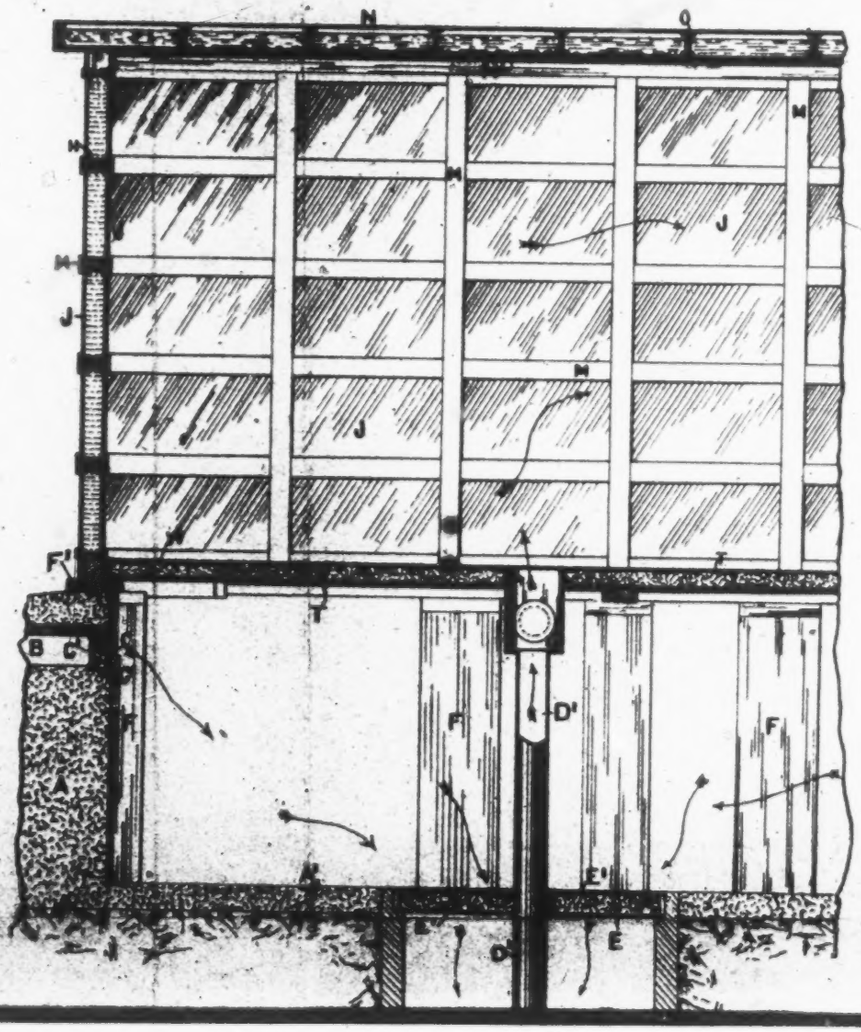
(No Model.) 7 Sheets—Sheet 3.

W. VAN DER HEYDEN.

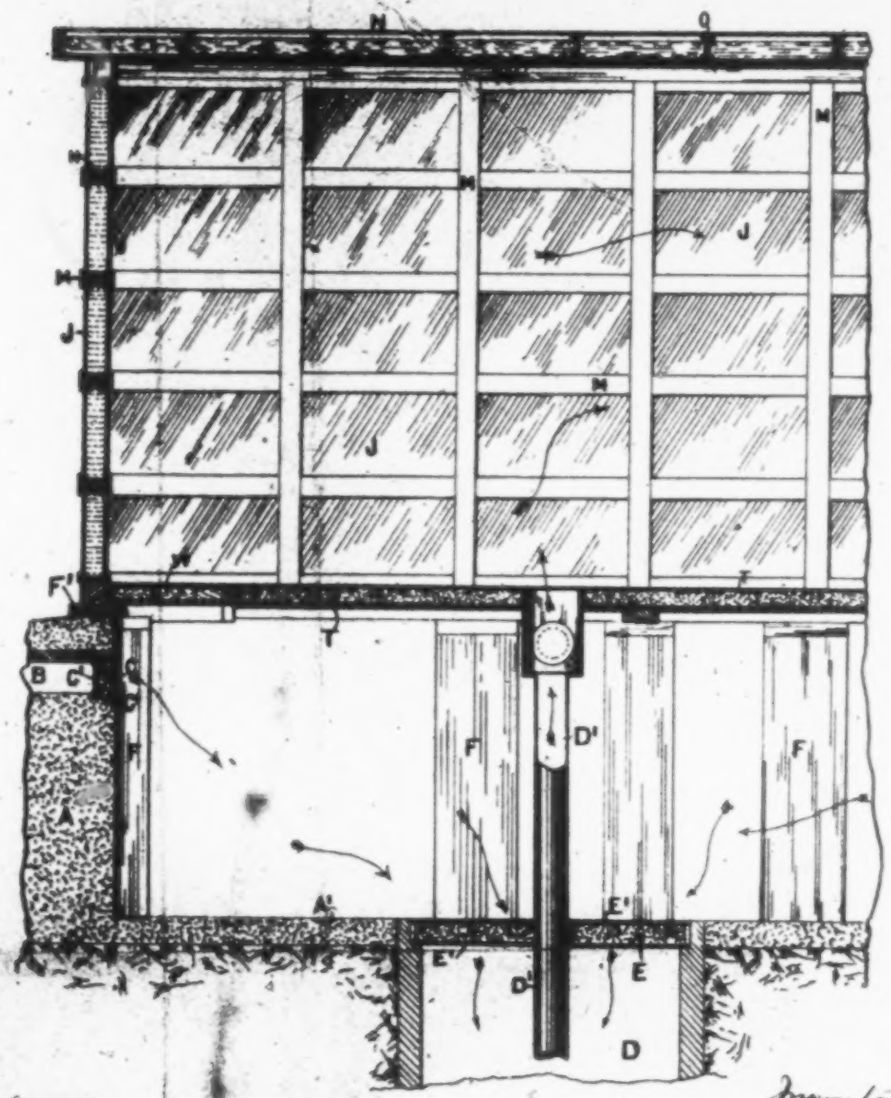
SANITARY HOUSE.

No. 504,544. Patented Sept. 5, 1893.

— FIG. 3. —



— FIG. 3 —



Witnesses
Chas. H. Smith
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1084

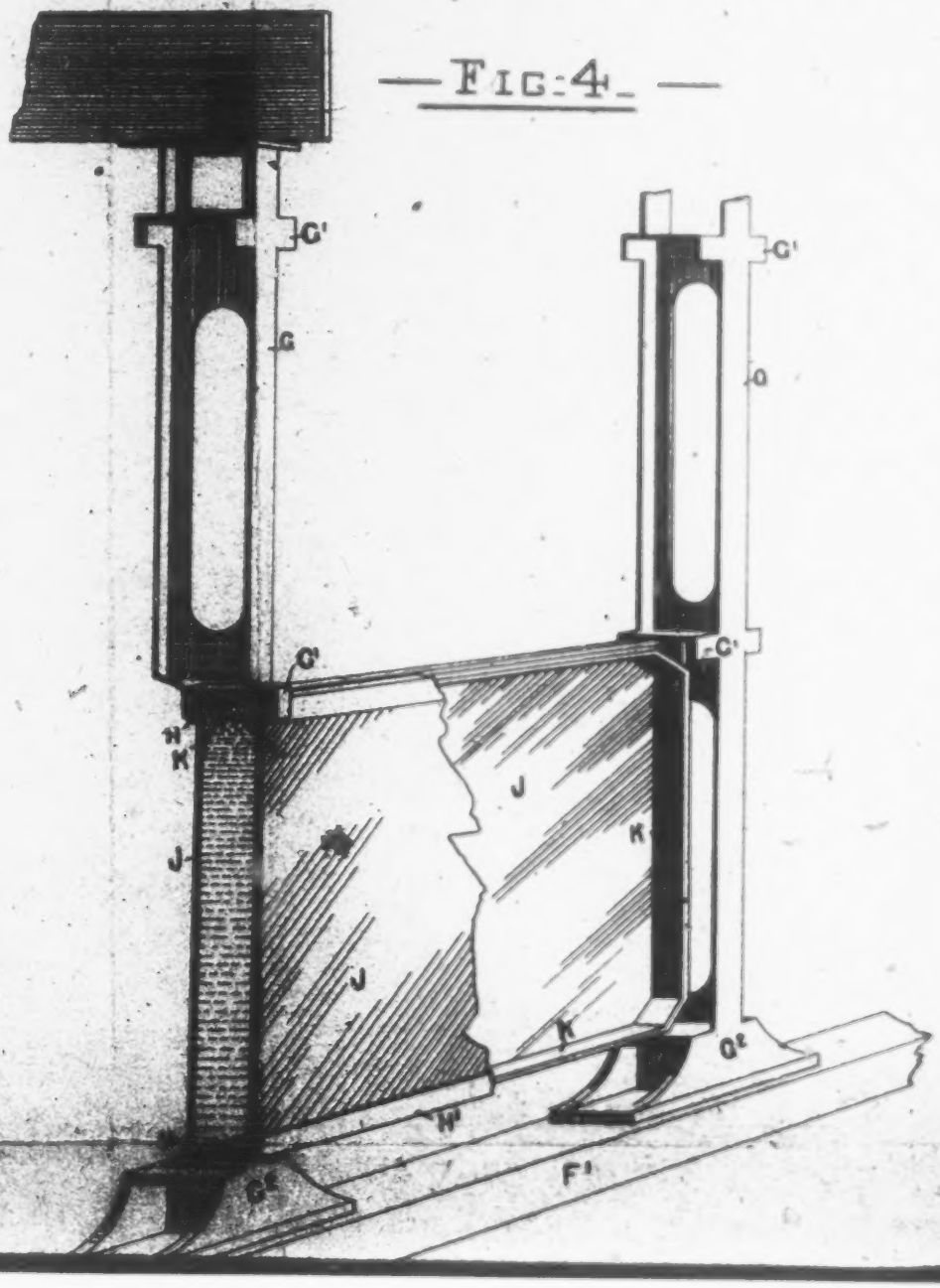
(No Model.) 7 Sheets—Sheet 4.

W. VAN DER HEYDEN.

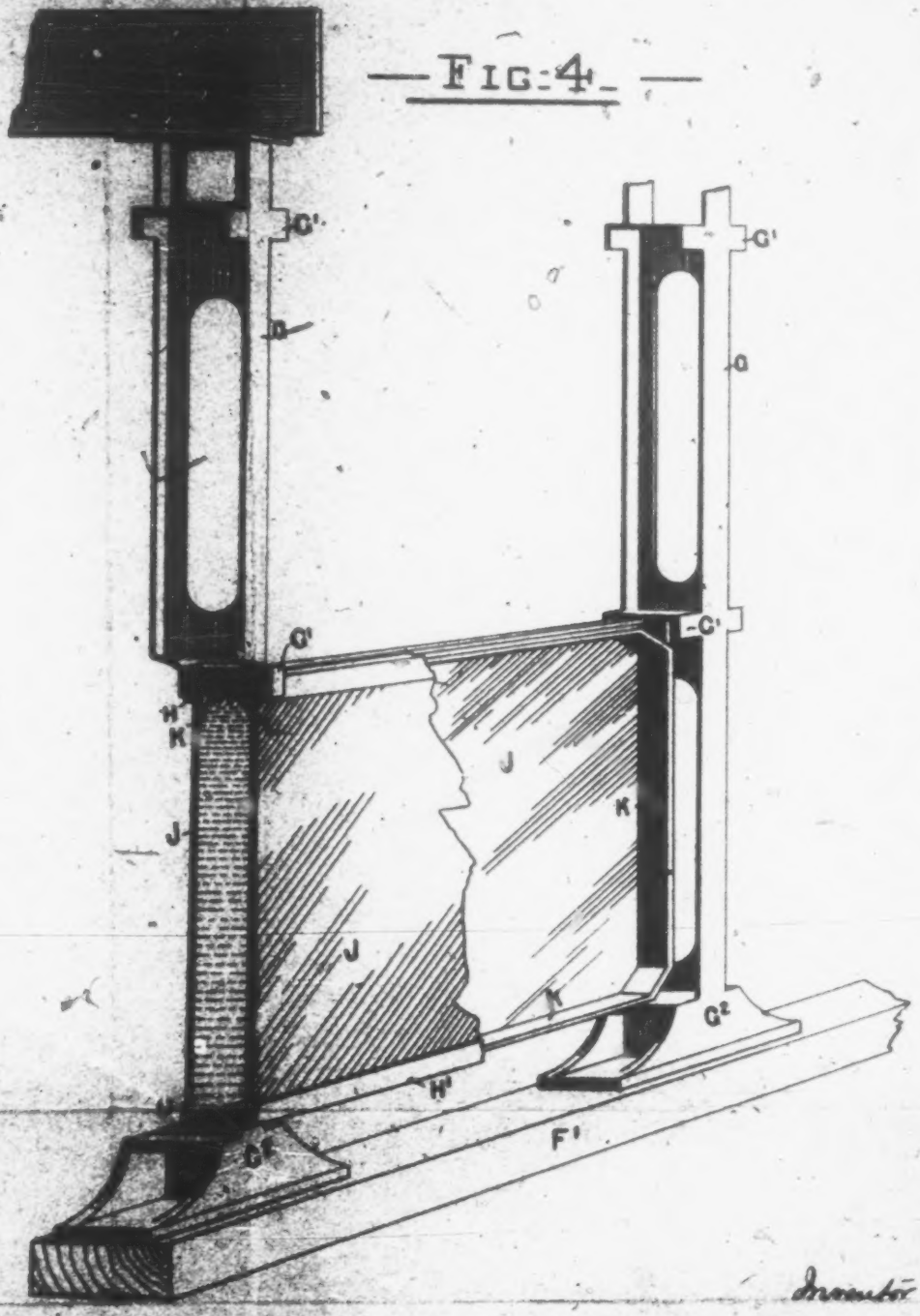
SANITARY HOUSE.

No. 504,544. Patented Sept. 5, 1893.

FIG. 4.



— FIG: 4 —



Witnesses
Chas. A. Smith
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1085

(No Model.) 7 Sheets—Sheet 5.

V. VAN DER HEYDEN.

SANITARY HOUSE.

No. 504,544. Patented Sept. 5, 1893.

FIG. 5.

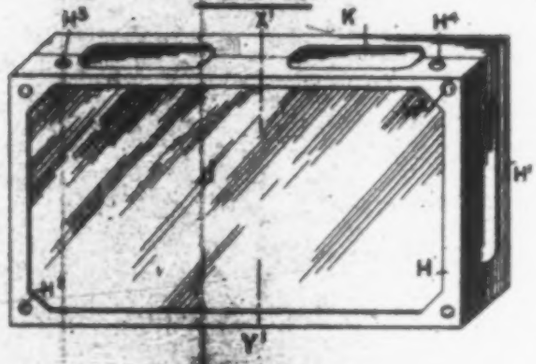


FIG. 6.

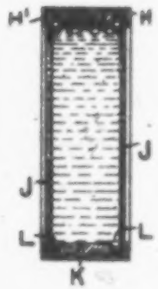


FIG. 7.

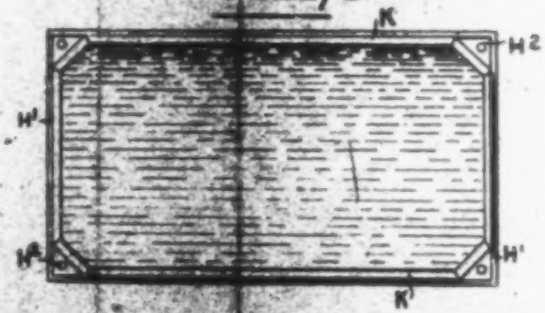
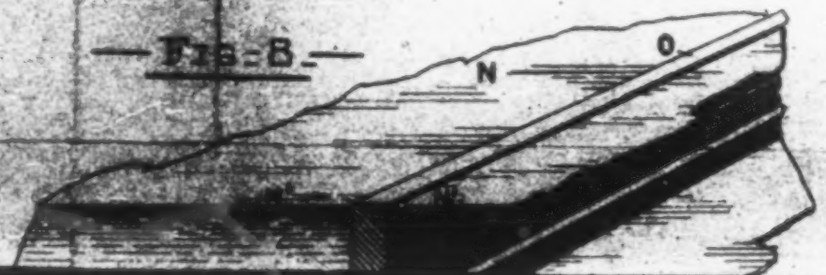


FIG. 8.



No. 504,544. Patented Sept. 5, 1893.

FIG. 5.

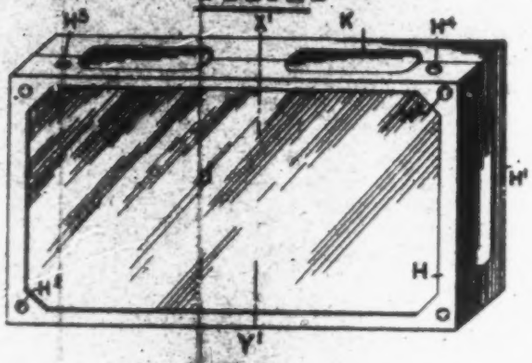


FIG. 6.

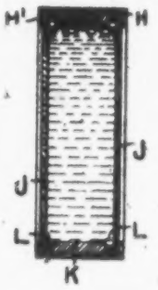


FIG. 7.

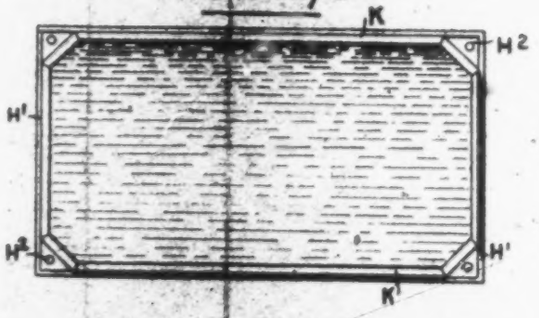
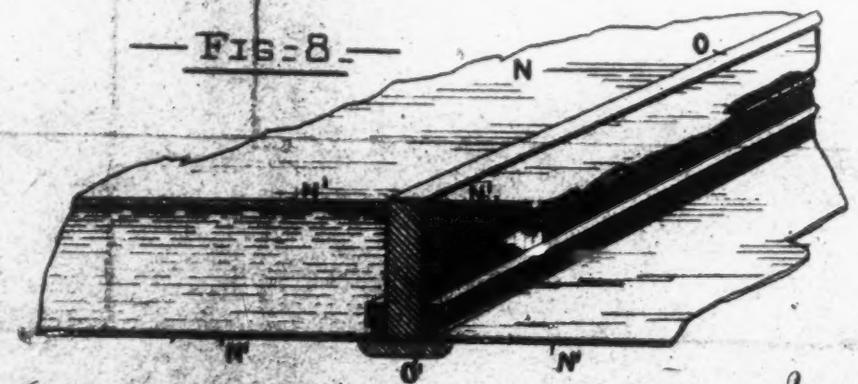


FIG. 8.



Witnesses
Chas. H. Smith
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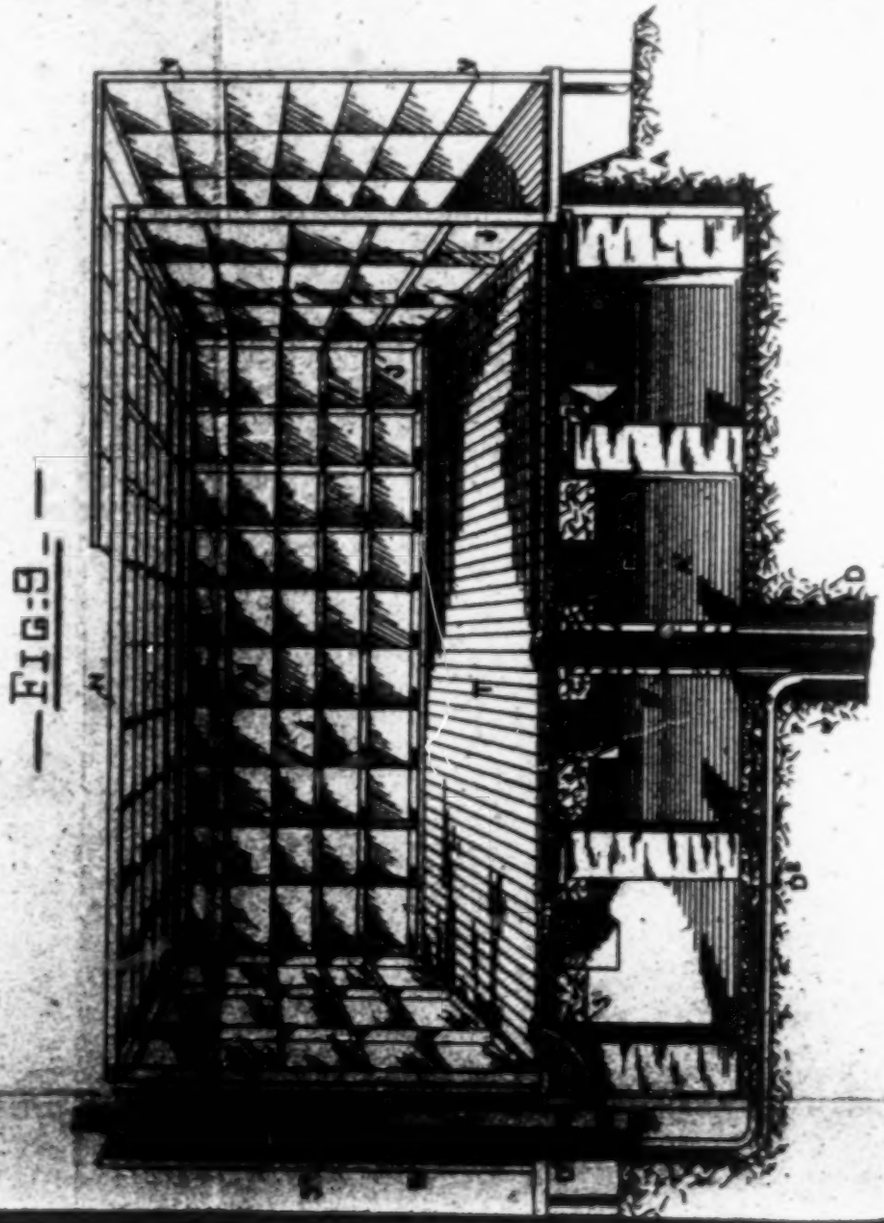
1086

(No Model.) 7 Sheets—Sheet 6.

W. VAN DER HEYDEN.

SANITARY HOUSE.

No. 504,544. Patented Sept. 5, 1893.



—Fig. 9.—

SANITARY HOUSE.

No. 504,544. Patented Sept. 5, 1893.

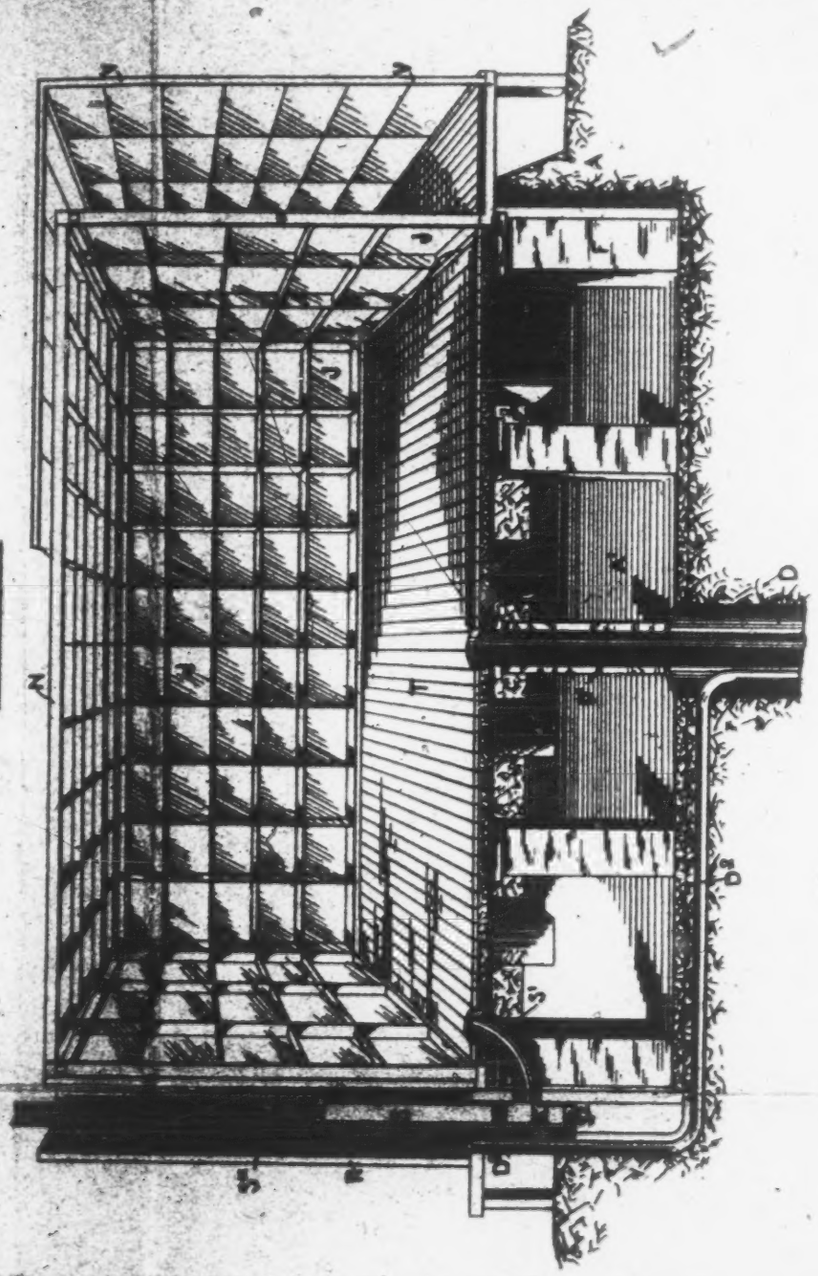


Fig. 9.

Witnesses
Chas. A. Smith
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per Samuel W. Farrell
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1087

(No Model.) 7 Sheets—Sheet 7.

W. VAN DER HEYDEN.

SANITARY HOUSE.

No. 504,544. Patented Sept. 5, 1893.

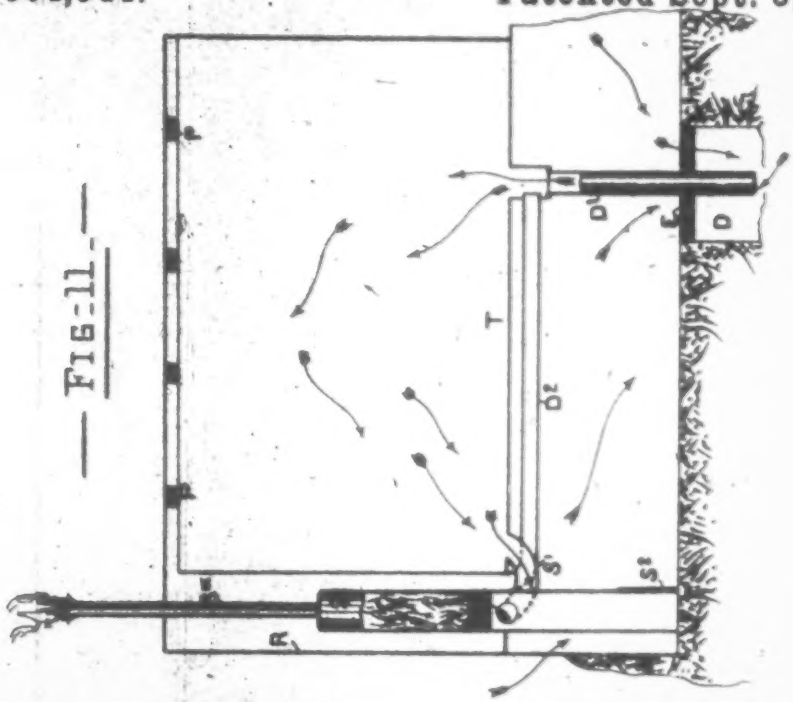

FIG. 11.

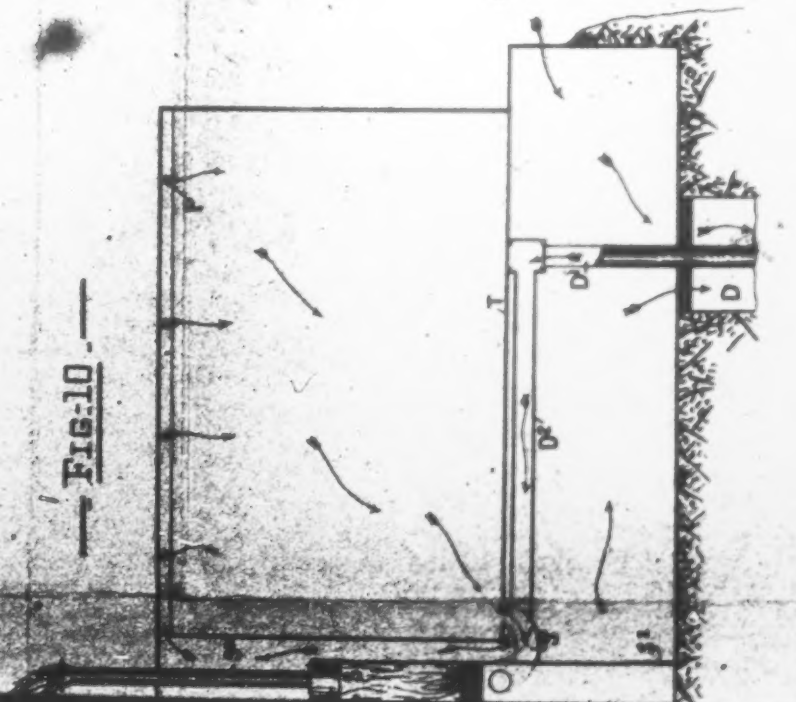

FIG. 10.

FIG-11

FIG-10

Witnesses
Chas. Schmidt
J. Stead

Inventor
W. van der Hayden
per Lemuel W. Serrell

UNITED STATES PATENT OFFICE.

WILLIAM VAN DER HEYDEN, OF YOKOHAMA, JAPAN.

SANITARY HOUSE.

SPECIFICATION forming part of Letters Patent No. 504,544, dated September 5, 1893.

Application filed December 13, 1892. Serial No. 454,977. (No model.) Patented in England September 10, 1891, No. 15,347.

To all whom it may concern:

Be it known that I, WILLIAM VAN DER HEYDEN, a subject of the King of Holland, residing at Yokohama, in the Empire of Japan, have invented certain new and useful Improvements in Houses, (for which a patent has been granted me in Great Britain, being dated September 10, 1891, No. 15,347,) of which the following is a specification.

My invention refers to the construction of houses as hereinafter described, which enable people to live hygienically both in the coldest climates and in the hottest countries, and my said invention consists of a building, the walls thereof being composed of boxes of particular construction as hereinafter described, having the vertical sides of the same formed of glass and transparent, and a transparent roof or ceiling similarly constructed, the space within or between the double transparent walls and roof being filled with water containing alumen in solution. In buildings thus constructed daylight penetrates to every part of the interior of the dwelling, while the alum solution contained by and within the thickness of the walls enables an always equal temperature to be maintained within the house, a temperature in fact equal to that of the ice introduced. It will thus be evident that in hot climates the introduction of cool [illegible], while in cold climates or cold [illegible] introduction of warmed air is desirable, there should therefore be provided [illegible] air at suitable temperatures, [illegible] I shall hereinafter describe [illegible] ventilation and warming [illegible] to answer the purpose, [illegible] in combination with such a construction of dwelling, although I do not lay any claim to such ventilating and warming [illegible] tion of Fig. 1. Fig. 3 is a vertical cross section about the line *x y* of Fig. 1, and drawn to a somewhat larger scale than the latter figure. Figs. 4 to 11 are views appertaining to the construction and arrangement hereinafter referred to.

Similar letters of reference refer to like parts in the several figures.

According to my invention I construct the building with a basement and an upper story, the said basement being situated under ground or inclosed by thick walls A.

Upon the pillars F located within the basement and upon beams F' supported thereon are standards G preferably of metal between which the walls extend, and according to my invention I make these walls double and of plate glass so arranged that between the two thicknesses of glass there remains a space. As this space is intended to contain water or a solution of a salt, as hereinafter described, the glass panes should be connected and arranged in such a way as to form water-tight closed boxes or cases, the said walls of the upper story or stories being composed of a number of such boxes or cases.

The construction of a box or case is shown at Figs. 4 to 7, Fig. 4 being a sectional perspective view showing two supporting metal uprights or columns G, and one of the boxes or cases supported thereby. Fig. 5 is a perspective view of one of the boxes separated. Fig. 6 is a vertical transverse section on the line *x' y'* of Fig. 4, and Fig. 7 shows the box with the frame and glass of one side removed, to show the interior.

Fig. 8 shows a sketch of two of the boxes or cases for the roof or ceiling as is necessary to explain the construction of the same.

Each box or case for the walls, see Figs. 5

SANITARY HOUSE.

SPECIFICATION forming part of Letters Patent No. 504,544, dated September 5, 1893.

Application filed December 12, 1892. Serial No. 454,377. (No model.) Patented in England September 10, 1891, No. 15,347.

To all whom it may concern:

Be it known that I, WILLIAM VAN DER HEYDEN, a subject of the King of Holland, residing at Yokohama, in the Empire of Japan, have invented certain new and useful Improvements in Houses, (for which a patent has been granted me in Great Britain, being dated September 10, 1891, No. 15,347,) of which the following is a specification.

My invention refers to the construction of houses as hereinafter described, which enable people to live hygienically both in the coldest climates and in the hottest countries, and my said invention consists of a building, the walls thereof being composed of boxes of particular construction as hereinafter described, having the vertical sides of the same formed of glass and transparent, and a transparent roof or ceiling similarly constructed, the space within or between the double transparent walls and roof being filled with water containing alumen in solution. In buildings thus constructed daylight penetrates to every part of the interior of the dwelling, while the alumen solution contained by and within the thickness of the walls enables an always equal temperature to be maintained within the house, a temperature in fact equal to that of the air introduced. It will thus be evident that in hot climates the introduction of cool air is preferable, while in cold climates or cold seasons the introduction of warmed air is desirable. Means should therefore be provided for the supply of air at suitable temperatures, and with this object I shall hereinafter describe means for ventilation and warming which I have found to answer the purpose, when used in combination with such a constructed dwelling, although I do not lay especial claim to such ventilating and warming devices except as when fitted in houses constructed according to my invention.

In order that my invention may be readily understood, I will now fully describe the same with reference to the accompanying drawings which show by way of example as much of a house and [illegible] constructed according to my invention, as will be necessary to explain the construction and arrangement of the same.

Figure 1 is a plan, portions of the flooring, [illegible] removed. Fig. 2 is an end elevation of Fig. 1. Fig. 3 is a vertical cross section about the line $x\ y$ of Fig. 1, and drawn to a somewhat larger scale than the latter figure. Figs. 4 to 11 are views appertaining to the construction and arrangement hereinafter referred to.

Similar letters of reference refer to like parts in the several figures.

According to my invention I construct the building with a basement and an upper story, the said basement being situated under ground or inclosed by thick walls A.

Upon the pillars F located within the basement and upon beams F′ supported thereon are standards G preferably of metal between which the walls extend, and according to my invention I make these walls double and of plate glass so arranged that between the two thicknesses of glass there remains a space. As this space is intended to contain water or a solution of a salt, as hereinafter described, the glass panes should be connected and arranged in such a way as to form water-tight closed boxes or cases, the said walls of the upper story or stories being composed of a number of such boxes or cases.

The construction of a box or case is shown at Figs. 4 to 7, Fig. 4 being a sectional perspective view showing two supporting metal uprights or columns G, and one of the boxes or cases supported thereby. Fig. 5 is a perspective view of one of the boxes separated. Fig. 6 is a vertical transverse section on the line $x'\ y'$ of Fig. 5, and Fig. 7 shows the box with the frame and glass of one side removed, to show the interior.

Fig. 8 shows so much of two of the boxes or cases for the roof or ceiling as is necessary to explain the construction of the same.

Each box or case for the walls, see Figs. 5 to 7, is composed of two similar cast iron or other metal frames H and H′, and on these frames the glass panes J J are laid and fixed thereto by suitable cement applied in a fluid condition so that it fills up all the gaps and spaces left by any unevenness of the glass J J or the metal frames H H′. A wood or other suitable frame [illegible] provided on both edges with a strip of rubber (caoutchouc) L L, Fig. 6, is interposed between the two metal frames H H′, and bolts [illegible] are passed through the corners of the metal frames H H′ so as to pass

outside clear of the frame K, as clearly shown at Fig. 7; by these bolts the frames H H' are held together pressing against the frame K and thus pressing the elastic strips against the glass panes J J in such a manner as to insure an air and water-tight joint.

The frame K should be prepared by being painted and varnished or otherwise, so that no fluid may be absorbed by it. The water or solution is let in through an opening H² on the top of the metal frames and another opening H³ is provided for the escape of the air; both of the said openings H² H³ are closed by, for example, a wood plug, after the filling. The boxes so formed rest on steps G' formed on the cast iron or steel uprights or columns G, shown at Fig. 4, which latter are formed with a foot G² by means of which they are secured by screws or the like to the beams F' resting directly on the aforesaid stone pillars F.

I do not confine myself to the precise arrangement of the uprights shown, such being samples of construction, the design of which must be varied to suit the style of architecture, and the details of the said columns may be varied to suit requirements; thus, one of the side flanges thereof may be made removable, so that the boxes or cases may be readily removed for repair, or be placed in position without disturbing those adjacent, and other constructional parts may be varied somewhat to suit requirements and according to circumstances.

The metal uprights as well as the spaces between the boxes or cases should be covered with felt and over this, with thin wooden [illegible] as H, Fig. 2, in order to prevent [illegible] of heat, and these [illegible] are provided both outside [illegible] such a way that [illegible] is not exposed. The [illegible] in a simi- [illegible]

the glass panes of the boxes of the walls and of the ceiling or roof I fill with a solution of kali alumen or ammonia alumen, which has the well known property of absorbing radiant heat. Supposing a temperature of the outside air in the tropical climates to be between 140° and 150° Fahrenheit or about 60° Celsius, I may to one hundred parts of water employ about fifty parts of alumen, that is half the weight of the water, or in some cases if found preferable I may use other salts, for instance sulphate of soda and others. The tiers of glass boxes or cases placed one above another to form the walls of the dwelling and supported on the steps of the metal column, see Fig. 4, do not reach up to the glass cases forming the ceiling, the columns being somewhat higher, a space is thus left between the top of the walls and the ceiling, and this I close by a woodwork molding. It is through this space and molding that heated air may be passed, from a heating apparatus into the chamber, and the air may also be caused to escape from the interior thereof through openings P, Figs. 3, 10 and 11, in the aforesaid molding. The various openings may each of them be closed if desired for the regulation of the influx or efflux of the warm air.

The floor T of the dwelling place proper should be made of wood of double thickness, the space between being filled with sawdust as shown at Figs. 3 and 9, while in the corners glass boxes W, Figs. 1 and 3, similar to those of the walls, are provided to admit light to the basement.

The entrance to the dwelling place is made by carrying several of the boxes such as compose the walls, in a hinged iron frame, as indicated at W', Fig. 1, this opening from an entrance chamber W² closed by another ordinary door W³, or in some cases entrance may be had by steps and an opening in the floor of the dwelling closed by a trap door, although this latter arrangement is not shown in the accompanying drawings; in both arrangements the doors should close air-tight.

In houses constructed as described, the [illegible] being closed to the outer [illegible] it is of course necessary to provide air [illegible] [illegible] air and warmth [illegible] [illegible] for the supply of the [illegible] [illegible] the dwelling place [illegible] basement the sunlight does not [illegible]

weight of the water, or in some cases if found preferable I may use other salts, for instance sulphate of soda and others. The tiers of glass boxes or cases placed one above another to form the walls of the dwelling and supported on the steps of the metal column, see Fig. 4, do not reach up to the glass cases forming the ceiling, the columns being somewhat higher, a space is thus left between the top of the walls and the ceiling, and this I close by a woodwork molding. It is through this space and molding that heated air may be passed, from a heating apparatus into the chamber, and the air may also be caused to escape from the interior thereof through openings P, Figs. 8, 10 and 11, in the aforesaid molding. The various openings may each of them be closed if desired for the regulation of the influx or efflux of the warm air.

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The entrance to the dwelling place is made by carrying several of the boxes such as compose the walls, in a hinged iron frame, as indicated at W′, Fig. 1, this opening from an entrance chamber W³ closed by another ordinary door W², or in some cases entrance may be had by steps and an opening in the floor of the dwelling closed by a trap door, although this latter arrangement is not shown in the accompanying drawings; in both arrangements the doors should close air-tight.

In houses constructed as described, the interior being closed to the outer atmosphere it is of course necessary to provide air, preferably cool air, or air and warmth according to circumstances, for the supply of the interior, and I will now describe means for effecting this object. The basement or "go-down" beneath the dwelling place, (and into which basement the sunlight does not enter) is formed with openings B B extending through from the interior to the open air; these openings B B are formed for the entrance of air, the latter being filtered as it enters, through cotton C, Fig. 3, with which the air apertures are packed, the said cotton being retained in position by gratings G G on either side. In the floor A′ of the basement there is a [illegible] D covered with a double iron grating [illegible] between which cotton E is placed, and a [illegible] D′ passes from the interior of the [illegible] through the grating and upward to a [illegible]

air of as constant a temperature as possible for the upper story of the house, the air being supplied to the well D from the atmosphere through the apertures B and the basement of the structure, all as hereinafter described. The basement may serve as a store room or "go-down" and where possible the well D may serve as a water supply.

Adjoining the house I provide a structure to contain the heating apparatus, which structure may be situated close to or entirely free from the house, and say to the south-west thereof. The heating structure consists of a building formed by double walls constructed as before described; that is to say, of double glass cases for containing liquid, excepting that in cold countries other materials than glass may be employed, and the walls may be solid and not contain liquid, and this structure may assume somewhat the form of a tower indicated by the letter R in the drawings, see Figs. 1, 2, 9, 10 and 11. Within this structure a stove S, Figs. 9, 10 and 11, is placed, an iron chimney S'' conveying the smoke through the roof of the heating tower R which latter is otherwise perfectly closed. The air within the tower R and around the stove becoming warmed, is conducted through suitable passages under the roof and passes through the aforesaid spaces P in the wooden molding aforesaid into the dwelling, while the tower R is supplied with fresh air by a separate pipe D' from the well, as at Fig. 9, or by a branch D^1, Figs. 1, 10 and 11, of the pipe D' before mentioned coming from the basement or well D in same, this entering at the floor of the tower R, Figs. 10 and 11, near the stove S but not communicating with same. The air in the tower R cannot communicate in any way with the interior of the stove. The air to serve for the combustion of the fuel in the stove S, passes through a tube S' from the interior of the dwelling having entered there for the respiration of the inmates, the tube S' passing through the floor of the dwelling place. The cylindrical portion of the stove may be continued through to the basement, as is shown at Figs. 10 and 11, where the ashes may be removed through a door S' usually closed, or the stove casing may be continued partially into the basement, as at Fig. 9, and be provided with a movable bottom as at S' in the figure. The stove is supplied with fuel through a funnel feeding device and the heat of the sun warms the air inside the iron tube which air will rise and must then necessarily be replaced by the air from the room. The carbon coating of the tube, when such is employed, absorbs heat and will give this off during the night continuing to cause thereby the circulation of air. When the weather is cold and the stove S is in action, air passes to the stove from the upper room by the tube S' and the upper room or dwelling place is supplied from the tower R, which obtains filtered air by the tube D' from the basement or well D. The diagram Fig. 10 clearly shows the direction of the air currents under the latter conditions by means of the arrows therein shown. In warm weather the heat of the sun acting on the iron chimney draws air through the stove from the dwelling, or the stove may be put in action, as is shown at diagram 11 with the same effect; the stove then receives its supply of air from the pipe S' aforesaid, air being drawn into the dwelling place through the tube D' from the well D, wherein as is well known the temperature is nearly constant. In the latter case the apertures P at the upper part of the dwelling place are closed as also is the tube D^2, while the opening of the tube D' in the floor T which was previously closed, is now opened; the well D as aforesaid receives its supply of air through apertures B and filtering partitions C C', E E', the directions of the currents being shown by the arrows Fig. 11.

In some cases where desired, the mechanical action of fans or like apparatus may be employed to promote circulation of air.

The solution of alumen does not readily freeze, but where this is likely, as in arctic regions, I may surround the house with a glass casing V, partly shown in Fig. 9, leaving a space which may contain warmed air supplied from the heating tower or vapor of water or ethereal oils.

I claim as my invention—

1. A building having the walls built up of water-tight boxes each filled with a solution of alumen, the exterior and interior vertical sides of the boxes being formed of glass, rendering the walls translucent, columns G by which the tiers of superposed boxes are supported, horizontal beams O carried on the said columns G for supporting the roof or ceiling, a translucent ceiling or roof composed of double-glass panes N, N' containing alumen

...re may be situated close to or entirely free from the house, and say to the south-west thereof. The heating structure consists of a building formed by double walls constructed as before described; that is to say, of double glass cases for containing liquid, excepting that in cold countries other materials than glass may be employed, and the walls may be solid and not contain liquid, and this structure may assume somewhat the form of a tower indicated by the letter R in the drawings, see Figs. 1, 2, 9, 10 and 11. Within this structure a stove S, Figs. 9, 10 and 11, is placed, an iron chimney S'' conveying the smoke through the roof of the heating tower R which latter is otherwise perfectly closed. The air within the tower R and around the stove becoming warmed, is conducted through suitable passages under the roof and passes through the aforesaid spaces P in the wooden molding aforesaid into the dwelling, while the tower R is supplied with fresh air by a separate pipe D' from the well, as at Fig. 9, or by a branch D^2, Figs. 1, 10 and 11, of the pipe D' before mentioned coming from the basement or well D in same, this entering at the floor of the tower R, Figs. 10 and 11, near the stove S but not communicating with same. The air in the tower R cannot communicate in any way with the interior of the stove. The air to serve for the combustion of the fuel in the stove S, passes through a tube S' from the interior of the dwelling having served there for the respiration of the inhabitants, the tube S' passing through the floor T of the dwelling place. The cylindrical portion of the stove may be continued downward to the basement, as is shown at Figs. 10 and 11, where the ashes may be removed through a door S^2 usually closed, or the stove casing may be continued partially into the basement, as at Fig. 9, and be provided with a movable bottom as at S^3 in the latter figure. The stove is supplied with fuel from above through a funnel feeding device, the position of which is indicated at U, Fig. 1, and this should be provided with a balance valve for closing the same when not in use.

The double walls of the tower R may in hot climates be filled with water or solution of iodine, and in such circumstances the chimney may be coated outside with lamp-black to absorb heat, and thus keep up the circulation, or the stove may in warm climates be replaced by a simple iron tube which is painted outside with a layer of carbon

dwelling place is supplied from the tower R, which contains filtered air by the tube D^2 from the basement or well D. The diagram Fig. 10 clearly shows the direction of the air currents under the latter conditions by means of the arrows therein shown. In warm weather the heat of the sun acting on the iron chimney draws air through the stove from the dwelling, or the stove may be put in action, as is shown at diagram 11 with the same effect; the stove then receives its supply of air from the pipe S' aforesaid, air being drawn into the dwelling place through the tube D' from the well D, wherein as is well known the temperature is nearly constant. In the latter case the apertures P at the upper part of the dwelling place are closed as also is the tube D^2, while the opening of the tube D' in the floor T which was previously closed, is now opened; the well D as aforesaid receives its supply of air through apertures B and filtering partitions C C', E E', the directions of the currents being shown by the arrows Fig. 11.

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The solution of alumen does not readily freeze, but where this is likely, as in arctic regions, I may surround the house with a glass casing V, partly shown in Fig. 9, leaving a space which may contain warmed air supplied from the heating tower or vapor of water or ethereal oils.

I claim as my invention—

1. A building having the walls built up of water-tight boxes each filled with a solution of alumen, the exterior and interior vertical sides of the boxes being formed of glass, rendering the walls translucent, columns G by which the tiers of superposed boxes are supported, horizontal beams O carried on the said columns G for supporting the roof or ceiling, a translucent ceiling or roof composed of double glass panes N' N' containing alumen solution between the same, a double wood flooring T having an inter-space filled with sawdust or non-heat conducting substance, and walls A and pillars F for supporting the structure, whereby a building is produced into which daylight penetrates to every part, while the walls, roof and flooring are practically impermeable to heat or cold, as set forth.

2. Boxes or cases for building translucent walls of dwellings, each composed of two metal frames H H', two plate glass panes J J fixed into the frames H H', a wood or other frame

K provided on each edge with rubber packing L L for interposition between the metal frames H H', bolts H' passing through both frames H H' to hold the same together and cause the rubber packing L L to press onto the glass panes and preserve a water-tight joint, and apertures H' H' for filling the box with a solution of alumen, as set forth.

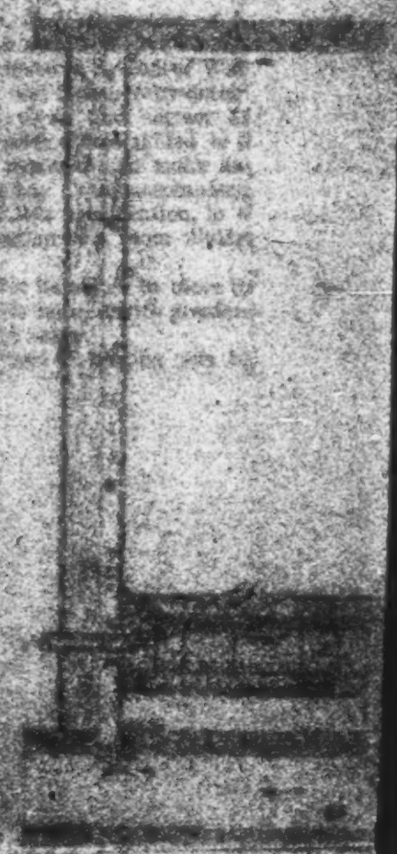
3. The combination in a building, of walls and roof built up of glass-sided boxes or cases filled with alumen in solution, the said walls and roof being translucent, a double floor T with inter-space therein filled with non heat conducting material, and an inclosed or underground basement beneath the floor T; apertures B in the basement walls with filtering medium C for admitting air to the basement, a well D in the floor of the basement, filtering cotton packed grating E' E' for filtering air admitted to the well from the basement, and a pipe D' from the well into the upper dwelling place to supply air of an equable temperature from the well to the dwelling place, as set forth.

4. The combination in a building having the walls and roof built up of glass-sided boxes or cases filled with alumen solution, the said walls and roof being translucent, of a double floor T, the inter-space therein packed with non heat conducting material, and an inclosed or underground basement beneath the floor T, and basement walls with apertures B and filtering medium C for admitting air to the basement, a well D in the floor of the basement, filtering grating E E' for filtering air admitted to the well from the basement, a stove S in out building R, pipe S' to conduct used air from the dwelling place to supply combustion, and pipes D' D' to conduct air from the well, to be heated by passing around the stove, and passages P by which fresh air enters the said dwelling place, as set forth.

5. The combination in a building having walls and roof, of boxes introduced in the walls and having glass sides and containing a solution of alumen for admitting light and intercepting heat rays, substantially as specified.

W. VAN DER HEYDEN.

Witnesses:
R. A. Mees,
T. Ishuire.



G. P. Schulze,

Ventilator.

No. 101,[illegible] Patented Mar. 22. 1870

1093

United States Patent Office.

G. F. SCHULZE, OF JANESVILLE, WISCONSIN.

Letters Patent No. 101,168, *dated March* 22, 1870.

SYSTEM OF HEATING AND VENTILATING.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, G. F. SCHULZE, of Janesville, in the county of Rock and State of Wisconsin, have invented a new and improved System of Warming and Ventilating Houses; and I do hereby declare the following to be a full, clear, and correct description thereof, which will enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawings forming part of this specification, in which the figure is a vertical section of a room illustrating my improved system.

My invention has for its object to more thoroughly heat dwelling and other houses, with greater economy of fuel than is now the case.

The primitive method of heating was by an open fire-place, of which the modern grate is a variation. While luxury has preserved the latter, economy has long since abandoned it. The fire-place was followed in progress by the common stove, which possesses the merit of radiating the heat from all sides. Without other appliances, and without intelligent direction and control of the heat, the stove is a defective and expensive medium for heating purposes.

The common stove radiates the heat but a short distance, warming only that portion of the air immediately surrounding it, which, as it becomes heated, is [illegible], and ascends, and is followed by a current of cold air from the floor of the room. This, in its turn, becomes heated and rises, thus producing a constant current of heated air. This current, however, is either [illegible] to a narrow space immediately surrounding the [illegible], leaving the remote parts of the room cold and [illegible], or fills the upper part of the room only, [illegible] a current of cold air next the floor, so that [illegible] surrounded by cold air, while the head [illegible] parts of the body are exposed to a dry, hot [illegible]

[illegible] in the method of heating by the com- [illegible] a remedy should have [illegible] attention seems to have been drawn [illegible]ing became confounded, so that about the same quantity of partially cooled air is now withdrawn and wasted from a dwelling with few occupants, not for ventilation, but in order to warm the same, as is expelled from an equal-sized dwelling with many occupants, when the expulsion may be justified on account of ventilation.

This leads to the inquiry why unvitiated and only partially-cooled air is wasted. This partially-cooled air is much warmer than that outside the dwelling, and should be returned to the furnace and reheated, instead of heating the extreme cold air from without.

My invention, therefore, consists in producing a circulation of heated air from a heater or furnace through the space to be heated, and, after being partially deprived of its caloric, back to the furnace to be reheated, the circulation being continued indefinitely, or until the air becomes vitiated, when it is discharged, and fresh air introduced.

The accompanying drawings represent the section of a dwelling-house, of which—

A is a room;
B, the floor;
C, the ceiling;
D, the ceiling of a lower room; and
E, an outside wall.

The floor B is raised slightly above the lower ceiling D, to leave an air-space, F, between them, which communicates at one end with the room A, and at the other end with the flue or chimney, G.

H is a hollow cylinder, open at both ends, placed vertically within the room A, surrounding the stove, furnace, or other heater I, and communicating at its lower end with the space F beneath the floor.

J is a pipe connecting the interior of the cylinder with the outer air, or arranged in any suitable manner to supply cold air to the heater when desired.

It is provided with a valve or damper, a, by which the supply of cold air is introduced or not off.

b is also a valve or register in the flue G, by which communication is opened or closed between the space

SYSTEM OF HEATING AND VENTILATING.

The Schedule referred to in these Letters Patent and making part of the same.

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The common stove radiates the heat but a short distance, warming only that portion of the air immediately surrounding it, which, as it becomes heated, is rarefied, and ascends, and is followed by a current of cold air from the floor of the room. This, in its turn, becomes heated and rises, thus producing a constant current of heated air. This current, however, is either confined to a narrow space immediately surrounding the stove, leaving the remote parts of the room cold and uncomfortable, or fills the upper part of the room only, leaving a current of cold air next the floor, so that the feet are surrounded by cold air, while the head and upper parts of the body are exposed to a dry, hot temperature.

These defects in the method of heating by the common stove being recognized, a remedy should have been found, but attention seems to have been drawn to some other evil, in the efforts to cure which an economical and thorough system of heating was entirely overlooked.

Ventilation then became the object sought after. This, it was found, consisted in the introduction of fresh air and the expulsion of vitiated air. In order to prevent the introduction of cold air directly into a room, it was first carried to a furnace, and from thence conducted into the room or rooms through pipes or flues for conveying heated air from the furnace to the rooms caused the discovery that, to introduce a quantity of heated air into a room, the expulsion of an equal quantity of the air already in the room became necessary. At this point ventilation and heating became confounded, so that about the same quantity of partially cooled air is now withdrawn and wasted from a dwelling with few occupants, not for ventilation, but in order to warm the same, as is expelled from an equal-sized dwelling with many occupants, when the expulsion may be justified on account of ventilation.

This leads to the inquiry why unvitiated and only partially-cooled air is wasted. This partially-cooled air is much warmer than that outside the dwelling, and should be returned to the furnace and reheated, instead of heating the extreme cold air from without.

My invention, therefore, consists in producing a circulation of heated air from a heater or furnace through the space to be heated, and, after being partially deprived of its caloric, back to the furnace to be reheated, the circulation being continued indefinitely, or until the air becomes vitiated, when it is discharged, and fresh air introduced.

The accompanying drawings represent the section of a dwelling-house, of which—

A is a room;
B, the floor;
C, the ceiling;
D, the ceiling of a lower room; and
E, an outside wall.

The floor B is raised slightly above the lower ceiling D, to leave an air-space, F, between them, which communicates at one end with the room A, and at the other end with the flue or chimney, G.

H is a hollow cylinder, open at both ends, placed vertically within the room A surrounding the stove, furnace, or other heater I, and communicating at its lower end with the space F beneath the floor.

J is a pipe connecting the interior of the cylinder with the outer air, or arranged in any suitable manner to supply cold air to the heater when desired.

It is provided with a valve or damper, *a*, by which the supply of cold air is introduced or cut off.

b is also a valve or register in the flue G, by which communication is opened or closed between the space F and said flue G.

The smoke and products of combustion are discharged from the heater into the flue G by means of the pipe K, in the usual manner.

The operation is as follows:

As the furnace I becomes heated, the air within the cylinder H is also heated, and rises against the ceiling C of the room. This is followed by a current of cold air from the space F, which, in its turn, also rises, and is discharged through the cylinder into the room.

The heated air so escaping from the cylinder moves along the ceiling C to the outside wall E, and in its passage becomes cooled sufficiently to cause it to descend to the floor, beneath which it is allowed to pass

back again to the heater, to be reheated and again discharged into the room. By this means a constant circulation is produced in the direction of the arrows, thoroughly warming all parts of the room.

When the air becomes vitiated, the valve *a* in the supply-pipe J and the valve *b* in the flue G are opened, the former to admit fresh air around the heater, and the latter to permit the discharge of vitiated air from the room A through the space F into the flue. Such vitiated air is caused to ascend the flue, as shown by the arrows, being heated by contact with the pipe K from the heater. These operations are continued alternately, as will be readily understood.

It must, however, be borne in mind that the heating of the room is continued during the ventilating process, so that it will not be subjected to sudden changes in temperature.

Several rooms may be heated by my improved system from the same heater, which may be placed in any preferred story of the building or other structure.

It is requisite, however, to connect the room to be warmed with the hollow cylinder surrounding the heater, and the space below the floor with the bottom of the cylinder, this vertical air-shaft or cylinder being principally the cause of the circulation.

I do not confine myself to any specific arrangement for distributing the heated air, as it may be varied indefinitely without departing from the principle of my invention.

Having thus described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

The application of a hollow vertical air-shaft to a heater within the room to be heated, for the purpose of causing a constant circulation of heated air from the furnace through the space to be heated, and, after being partially deprived of its caloric, back to the heater to be reheated, continuing indefinitely, in combination with a ventilating process by which the vitiated air is expelled from the room or rooms, and cold air introduced, during the operation of warming, as herein shown and described.

G. F. SCHULZE

Witnesses:

A. A. JACKS,

S. HOLDREDGE, Jr.

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Technical World Magazine

HENRY M. HYDE, Editor R. T. MILLER, Jr., Publisher

Cover Design—George Brehm

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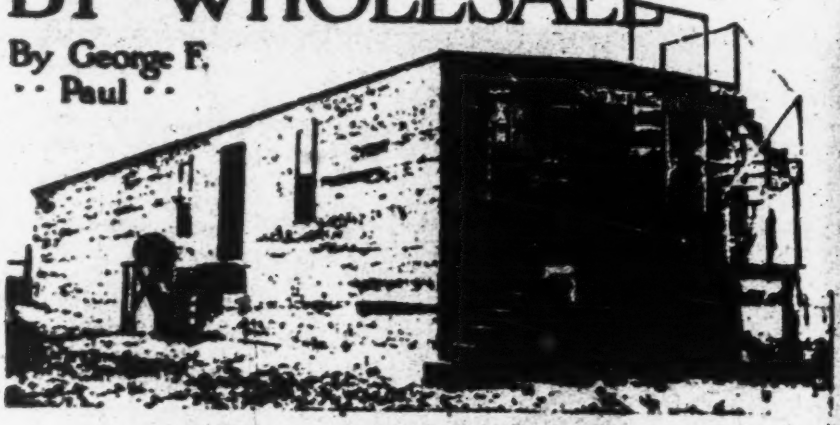
HATCHING CHICKENS BY WHOLESALE

By George F. Paul



THE 150,000 EGG HATCHERY AT PORT CONNOR, TEXAS
The remarkable feature of this building is its smallness as contrasted with its capacity

THERE is now in operation at Port O'Connor, Texas, a machine that is capable of turning out a chicken every twelve seconds for twenty-four hours a day, and for three hundred and sixty-five days in a year. This mammoth hatchery is the third of its type built by the inventor, who was formerly a poultry expert for the Government. It is the second largest hatching establishment in the world, being slightly exceeded in capacity by a hatchery at Petaluma, California, which holds 165,000 eggs as against 150,000 in the Texas machine.

Perhaps the most remarkable feature of this plant is the fact that all the eggs together with room for candling, chick packing, and all engines, fans, and equipment, occupy but a single floor sixteen by fifty feet. Furnished with common incubators, such a room would have just about the same capacity in three weeks as this plant has in a single day.

This wonderful economy of space and cost is attained by placing the eggs in superimposed trays like the type cases in a printer's case rack, or the trays in a fruit dryer. This idea has been tried before but was not a success on account of the hot air rising. In the present instance, this difficulty is overcome by forcing a continual current of air from a centrifugal fan through the hatching chamber, which serves to keep it at an even temperature throughout. While this is quite an item of expense and would not pay with a small machine, yet in a big plant it is paid for several times over by the saving of the duplication of the small machines, as well as by the economy of the fuel and labor.

One of the unique improvements in the Texas plant is a turning system, by which compartments holding 10,000 eggs are swung on a pivot and the eggs turned by inverting the entire compartment. This enables one man to turn 100,000 eggs in less than two minutes. These eggs are ventilated and maintained at an equal temperature by an eight hundred pound centrifugal fan, requiring four horsepower to operate it, and the temperature is regulated to a tenth of one degree, while water sprays regulate the moisture to a similar nicety.

The eggs are not cooled from the time they enter the hatchery until they leave

SOME OF THE TRAYS OF EGGS

the inventor believing that cooling is injurious. The eggs need be handled but three times; first, when put into the machine; second, when tested; third, when the chicks are taken off and boxed for shipment. With such a plant one man can do the work of five men running small incubators, or of ten thousand setting hens.

The most obvious question asked by the visitors at the plant is, "Where will you get the eggs?" The reply is that they will be purchased from the larger poultry breeders throughout the Southern and Middle Western States. These breeders will ship in case lots at much lower rates for eggs and for transportation than is the case of the petty sales of one or two settings. Thus the hatchery becomes the quickest and cheapest way to stock up a new country with pure bred poultry. If pure bred eggs cannot be secured in sufficient quantities, hackney wagons will be sent through the heavy egg-producing districts in the counties to the north. Lavaca is the banner poultry county of Texas.

A 30,000-egg hatchery built last year in Oklahoma was filled by March first and thereafter turned eggs away. This plant shipped chicks through a radius of five hundred miles. Many of the Eastern poultry plants ship chickens to practically every State in the Union and the plants on the Pacific coast ship as far east as Colorado. The manager of the Port O'Connor plant expects to confine his business to Texas, which is today one of the best markets known for baby chicks and is so far removed from the other large hatcheries that the expense and losses in shipping prove a serious handicap.

Inexperienced people ordinarily expect better results from artificial incubation than are secured in actual practice. This is perhaps due to the advertisements of some incubator manufacturers. Farm eggs sent to the hatchery run from fifty to seventy-five per cent hatches of all eggs entered. City-bred stock varies greatly. Occasional lots of Leghorn eggs hatch upwards of eighty per cent. Eggs from heavy breeds are often at the opposite extreme and in some instances eggs are sent to the hatchery that fail to produce a chick.

Custom handling for poultry fanciers is likely to be unsatisfactory. The chief business of the hatchery will be that of producing baby chicks for outside sale and hatching eggs for local commercial poultry growers.

The local promoters hope by the help of this giant hatchery to build up a poultry community on the Texas coast very much like those hatcheries of California where, in some localities, notably Petaluma, poultry raising is the chief industry and has proved very profitable, incomes of as high as three thousand dollars a year being made off of ten acres.

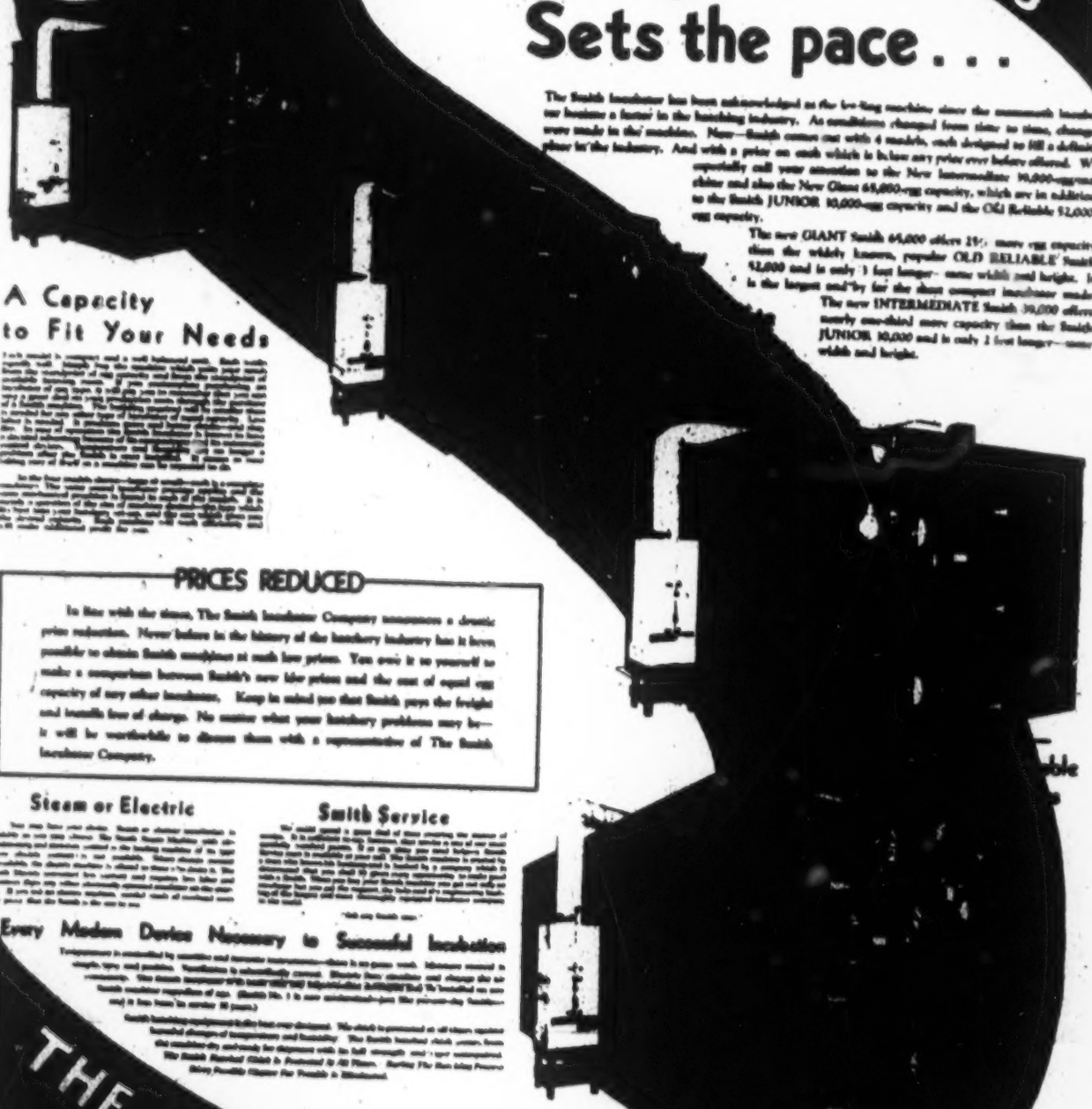
NOW 4 Models at Much Lower Prices

Smith again Sets the pace . . .

The Smith Incubator has been acknowledged as the leading machine since the mammoth incubator became a factor in the hatching industry. As conditions changed from time to time, changes were made in the machine. Now—Smith comes out with 4 models, each designed to fill a definite place in the industry. And with a price on each which is below any price ever before offered. We especially call your attention to the New Intermediate 10,000-egg machine and also the New Giant 65,000-egg capacity, which are in addition to the Smith JUNIOR 10,000-egg capacity and the Old Reliable 52,000-egg capacity.

The new GIANT Smith 65,000 offers 25% more egg capacity than the widely known, popular OLD RELIABLE Smith 52,000 and is only 1 foot longer—same width and height. It is the largest and by far the most compact incubator made.

The new INTERMEDIATE Smith 30,000 offers nearly one-third more capacity than the Smith JUNIOR 10,000 and is only 2 feet longer—same width and height.



A Capacity to Fit Your Needs

[illegible]

PRICES REDUCED

In line with the times, The Smith Incubator Company announces a drastic price reduction. Never before in the history of the hatchery industry has it been possible to obtain Smith machines at such low prices. You owe it to yourself to make a comparison between Smith's new low prices and the cost of equal egg capacity of any other incubator. Keep in mind too that Smith pays the freight and installs free of charge. No matter what your hatchery problems may be—it will be worthwhile to discuss them with a representative of The Smith Incubator Company.

Steam or Electric

[illegible]

Smith Service

[illegible]

Every Modern Device Necessary to Successful Incubation

[illegible]

THE SMITH INCUBATOR CO.
CLEVELAND OHIO

USED INCUBATORS

Dependable, used machines of all standard makes for sale at extremely low prices—rice and three years to pay. These machines have been taken in trade on new Smiths—have been reconditioned and put in good working order.

TERMS

We offer you the most liberal terms on all four Smith models. The cash payment is small and you have 3 years to pay the balance. If you want to dispose of your present used equipment we will take it in trade on New Smiths. Mail the attached card for full information.

DEFENDANT'S EXHIBIT No. 16

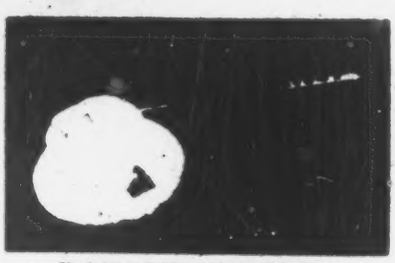
1098

A CHICK CHILLED IN HATCHING IS LIKELY TO DIE

Every poultry raiser and every hatcheryman has had experience with chicks that have been chilled in breeding. The results of such chilling are common knowledge. However, not every hatcheryman realizes that at hatching time a chick can be so chilled in a few minutes that its life is endangered. Do you realize that a wet chick exposed to hatchery room temperature and humidity immediately is subjected to a chilling temperature that equals the wet bulb reading of that room? In less than five minutes a chick is thoroughly chilled in sightest. In such less than five minutes' exposure, it receives a tremendous shock. The chick will not die at once and the hatchery operator may not even recall the chilling which was given the chick. However, losses may occur a week or so later as a result of this chilling, and the hatcheryman pays the bill either through replacement or a lost customer.

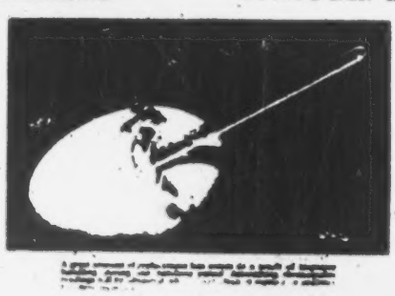
Hatcheryman have noted a great variation in livability even where percentage of hatch was the same and where other conditions from the same except the type of machine used. It will pay you to investigate this phase of hatchery operation for replacement costs are a real item to the hatcheryman.

Not in Boastful Pride, but with a feeling of service to the industry do we point out that no other Incubator can possibly give the hatching chick the protection given by the Smith Incubator



The Smith Incubator Never Chills Chicks

The Smith Incubator is so constructed that the chicks are not for any instant exposed to improper changing of temperature and humidity. Every instant, from the time the egg is yepped until the completely dried chick is carried from the incubator, a warm, moist atmosphere surrounds the hatching trays and evaporation proceeds slowly as should be the case. If a tray of hatching chicks is carried from the machine into the ordinary hatchery room, many of the wet chicks will be damaged. That is what happens in other types of machines where the trays are pulled out into the hatchery room for work or for inspection. No one ever removes a hatchfly tray from the Smith Incubator into the hatchery room atmosphere. The Smith is built so that it protects the chicks at all times. It is the only machine so constructed.

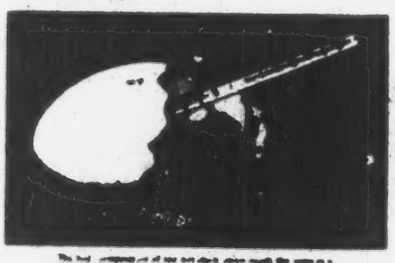


Smith Machine Easy to Fumigate

Most successful hatcheryman are fumigating regularly and thus prevent disease spread. Remember that disease spreads in the incubator only at hatching time and from one chick to another. Disease germs are only released after the chick pips the shell. Hatching in a separate hatcher or in any other type of an incubator will not prevent the disease germs from being released from infected chicks when they hatch. Proper fumigation will kill these germs before the chick dries and before the germs can be carried to other chicks. Disease germs are tiny, invisible spacks which ride on dust particles or "down". The "down" itself, which is always present where chicks are hatching, is not harmful to the chicks. The germs of disease which are a problem in incubators will not infect eggs in any stage of incubation. They can only infect chicks after they pip the shell. Anyone who tells you that a separate hatcher or any type of an incubator will prevent the spread of disease is either trying to mislead you or is not familiar with actual scientific facts. The germs are present in any type of a machine where diseased chicks are hatching. The question is merely one of getting out of these germs most readily, and fumigation is the only answer to this question that has been found. It is simple and easy in the Smith but not in all other types—in some cases it is impossible. Do not be misled by statements that fumigation is harmful to the chicks. On the contrary, if properly done in a Smith, it is actually beneficial and increases livability. The Smith Incubator is so constructed that the fumigating gases are carried quickly and uniformly to every part of the machine. The whole process is under control at all times, and it is not necessary to open the machine to carry on the work. The Smith Incubator has proven to be more easily and effectively fumigated than any other machine made.

Down to 80 Degrees in Ten Minutes

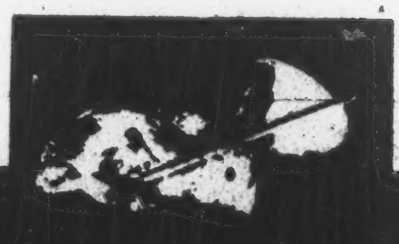
When we put a carefully graduated clinic thermometer in the rectal opening of a hatching chick under varying conditions, we discovered facts which we hardly believed ourselves, but which careful checking has proved to be correct. We found that a wet chick, just as it comes from the shell, is highly susceptible to chilling. In experiments we exposed chicks that had just rolled out of the shell to a hatchery room temperature of 67° for ten minutes. At the end of this ten minute period, we found that these newly hatched chicks were chilled 30° or more and, in many cases, the body temperature was as low as 80°. The above temperatures were taken by inserting special clinical thermometers in the rectum. It is not necessary for us to dwell on the fact that such chilling carries the utmost danger to the life of the chick. Even though death may not result, growth is retarded and losses are bound to follow. Can you afford to produce chicks which are not protected at all times from chilling temperatures?



Smith Users Get the Benefit

We are carrying forward at all times in the Smith Incubator plant tests on the best methods of handling baby chicks from the time the egg is set until the chick is in the hands of the customer. Our fumigation recommendations are the result of years of careful research and test. Our recommendations on the proper handling of the chick at hatching time are the result of most careful scientific work. Our attitude regarding the separate hatcher comes as a result of years of testing.

The Smith Incubator Company not only manufactures incubators. A shaker hatchery methods and incubation problems and the owner of a Smith Incubator profits as a result.



Because of all these things Smith Users Profit Most

Smith Engineering Brains . . .

Dr. S. B. Smith
The man behind the Mammoth Incubator Idea

Developed the Mammoth Incubator Idea

• • •

Devised the first Smith Machine

• • •

Improved the Machine year by year keeping it always the best in the field

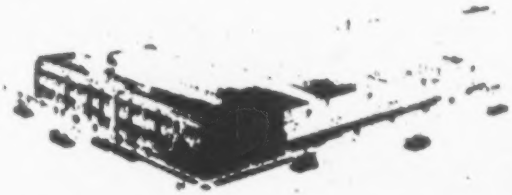
• • •

Developed and Demonstrated the Battery Brooder Method of Handling Surplus Chicks

• • •

Originated Many New Methods in Handling Both Chicks and Eggs Which Add to Hatchery Profits

Now make announcements in this folder which are of Utmost Importance to Hatcherymen



Plant of The Smith Incubator Co., Cleveland, O.

More Sound Ideas for the Hatcheryman Have Been Developed in this factory than in any other place in the world . . .

TURN THE PAGE AND READ . .
The Biggest Incubator News of the Day

PAID

1390

The Answer to the separate Hatcher question is →

All sorts of rumors have been floating around the hatchery industry concerning our attitude toward a separate hatcher. Some have stated that we proposed bringing one on the market such a machine. We have no intention whatever of bringing a separate hatcher on the market. We have definite reasons supported by scientific research for taking this stand. We are thoroughly convinced that the hatcherymen is better off from any standpoint without a separate hatcher. The majority of hatcherymen give no sound reason for a separate hatcher. They have not asked for it, and do not want it.

1. Our Research Department says "NO"

When the separate hatcher was first announced, and desiring to maintain our place of leadership in all phases of hatchery practice, we immediately proceeded to investigate its merits and the attitude of hatcherymen toward it. We tested out various types of hatchers. We built in our own plant, the best separate hatchers ever made. We tested them thoroughly. We studied them from the standpoint of quality of chicks produced—percentage of hatch—from the standpoint of production costs and from every standpoint of hatchery operation. In every case we found every type of separate hatcher a handicap instead of a help. Our Research Department today is unalterably opposed to a separate hatcher of any type as an investment by man.

2. Our Field Men say "NO"

In order to make a double check on the separate hatcher question we sent our field men to call on users of separate hatchers and others in the hatchery field. We found an overwhelming sentiment against the separate hatcher. It adds to the cost of producing chicks and lays greater financial burden on the hatcherymen who is already heavily laden with items of expense. We have yet to find a single hatcherymen who can demonstrate that chicks produced in a separate hatcher are any better than, if as good as, those produced in a Smith machine.

3. Our Sales Department says "NO"

The Smith Incubator Company has consistently introduced improvements in both mechanical equipment and methods of operation. Each change, however, has been made after most careful scientific testing and nothing has been offered the industry until it has stood most rigorous trials. Our Sales Department is not in favor of bringing something on the market simply to have something to sell. Our equipment stands by all brands in the guarantee for we realize that unless a purchaser makes money with the equipment, the sale will prove to be a hamstring in the long run. For that reason, our Sales Department has said that they do not want to offer a separate hatcher They do not believe it has any place in the commercial production of baby chicks.

1391

NO!

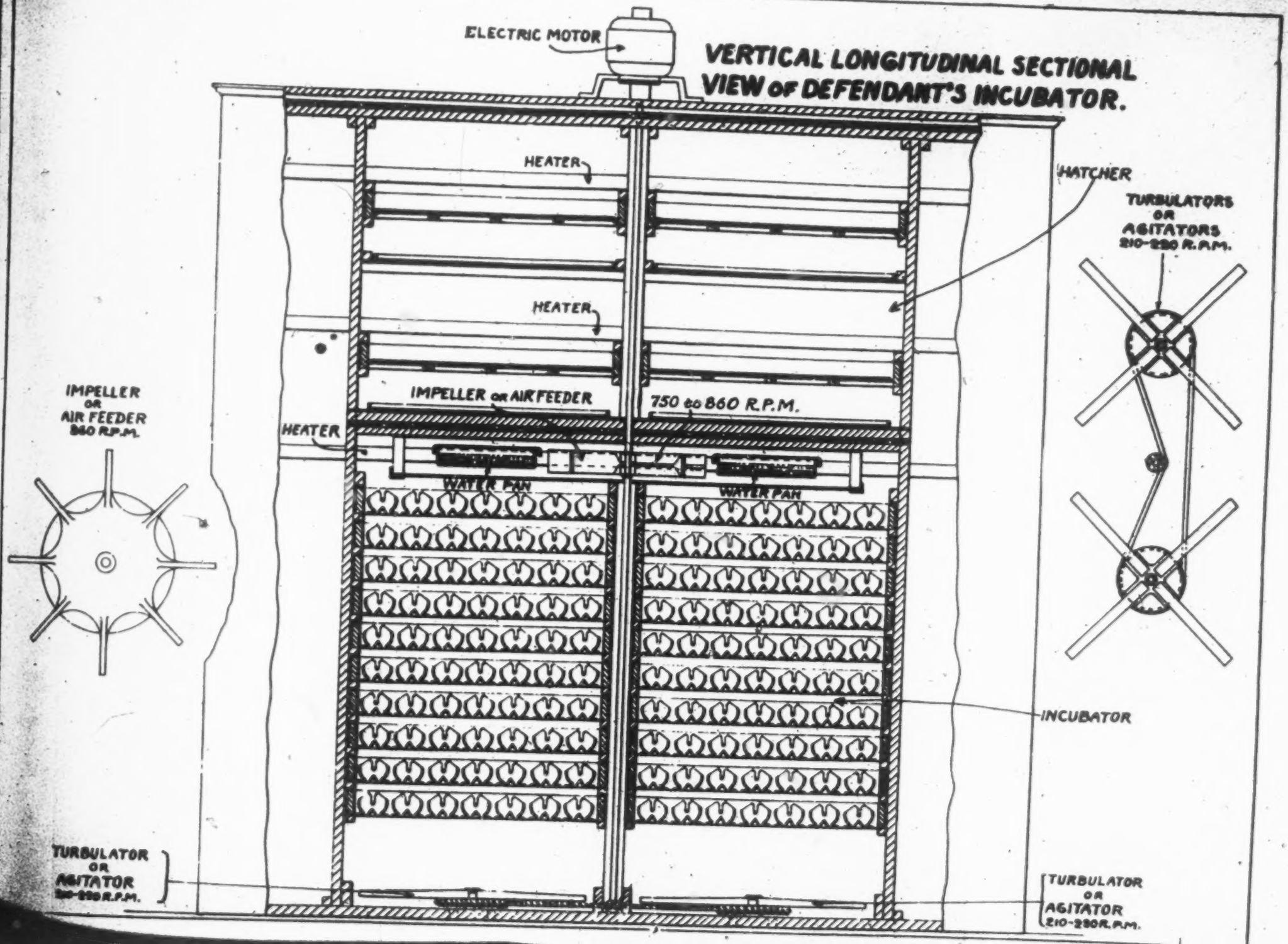
The Separate Hatcher Has No Place in the Hatchery Industry

Our tests have conclusively shown that a separate hatcher adds to the labor cost because the chicks and eggs must be handled more frequently. Separate hatchers add to the chances for exposing the chicks to damaging temperature and humidity changes. We have not found any separate hatcher which will add to the quality of chick produced---nor will it produce any greater per cent of hatch.

We believe a Smith machine produces a better chick than can be produced with any other type of equipment, and produces it at a lower cost per chick.

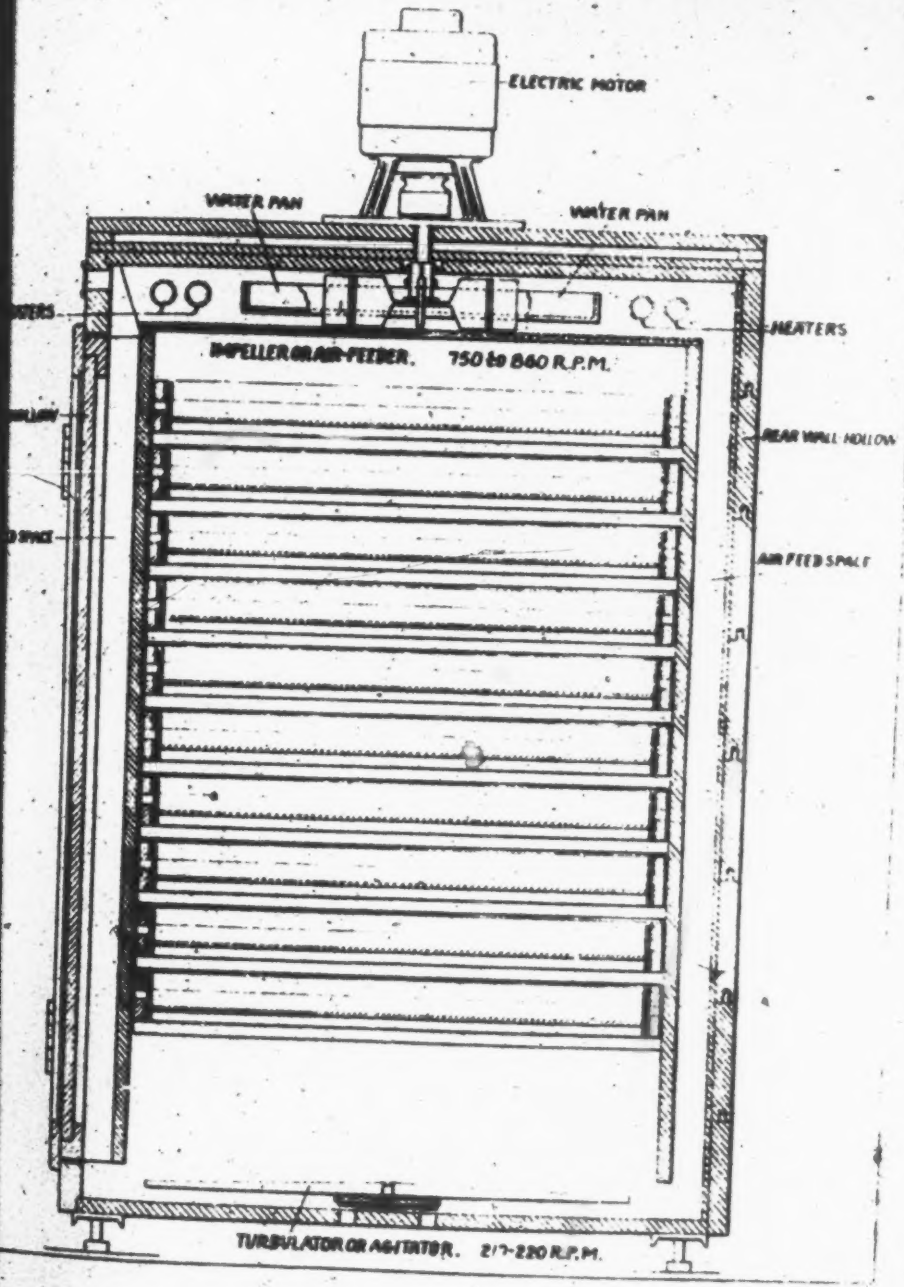
1391

DEFENDANT'S EXHIBIT No. 18 A



DEFENDANT'S EXHIBIT No. 18 B

VERTICAL CROSS-SECTION OF DEFENDANT'S INCUBATOR.



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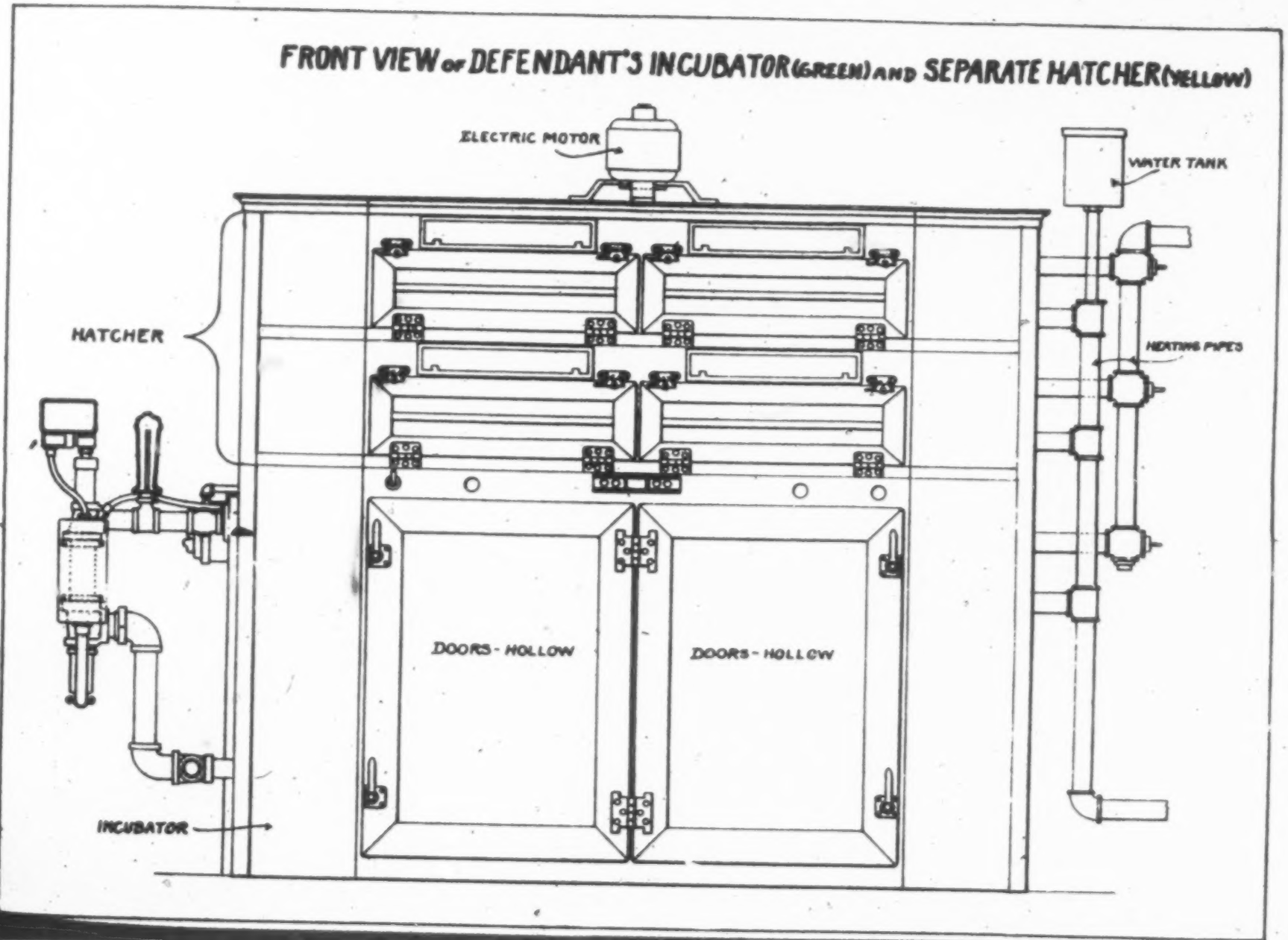
DEFENDANT S' EXHIBIT No. 18 C



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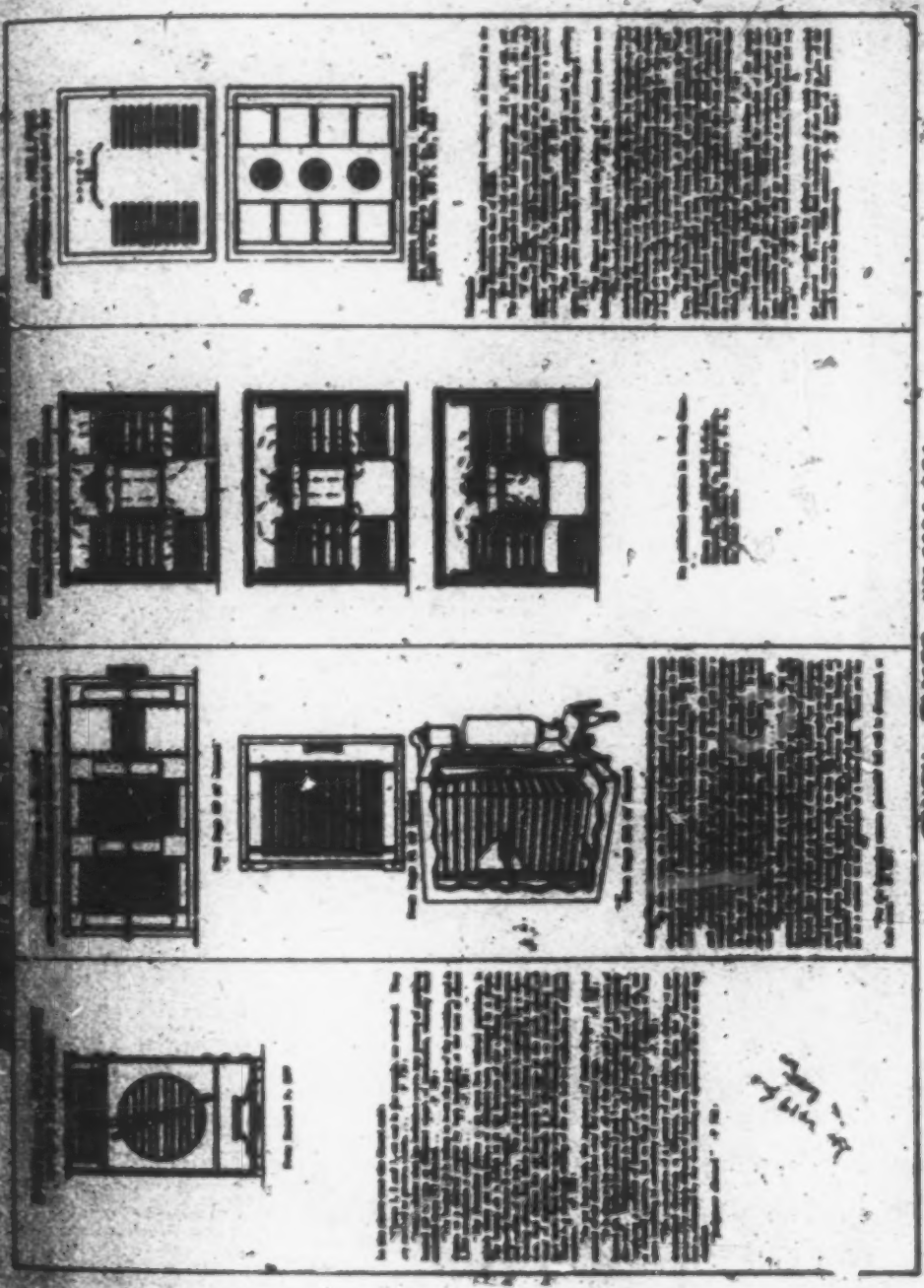


1106

DEFENDANT 8' EXHIBIT No. 20

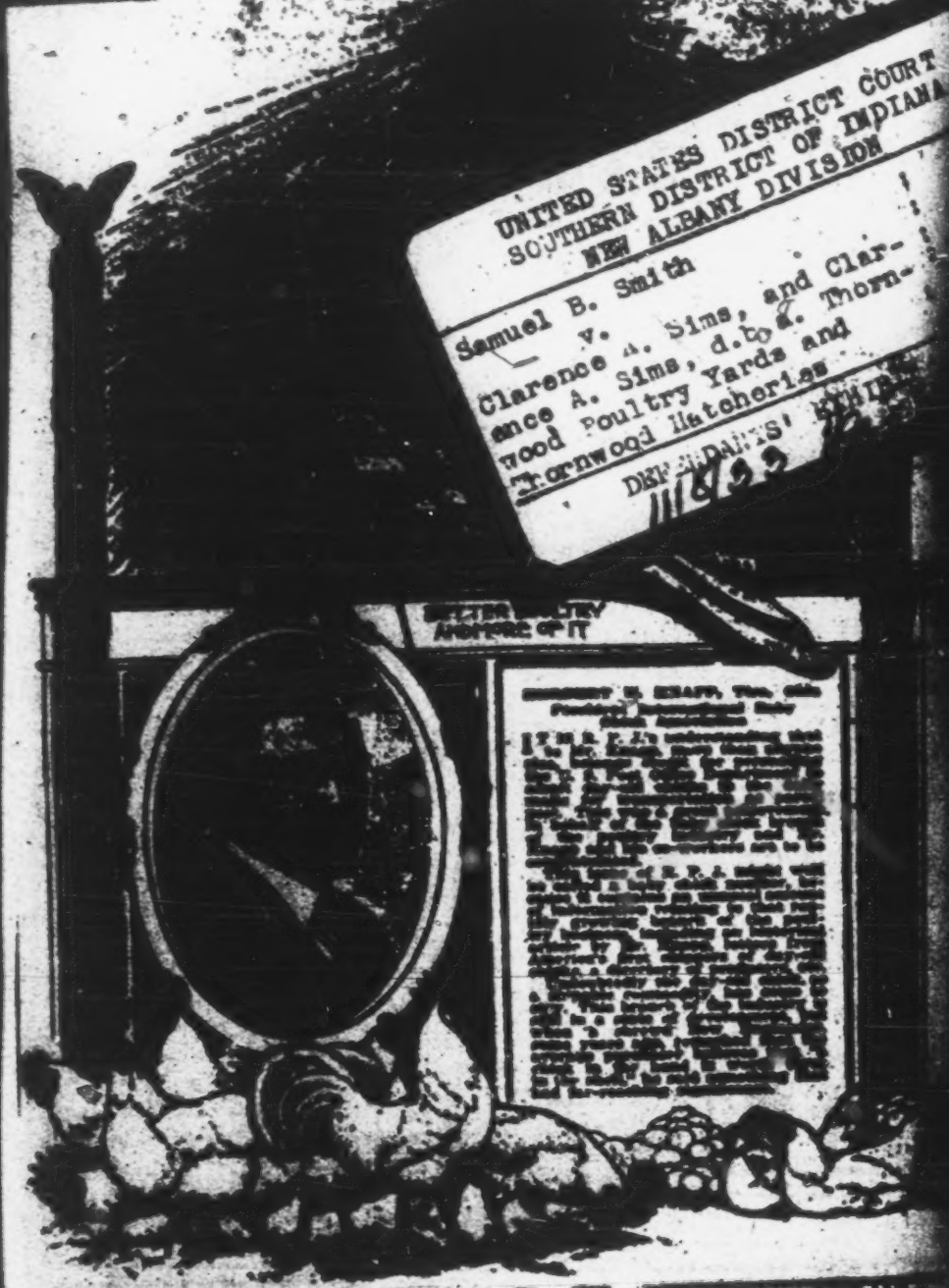
Day-Old Chicks Admitted to United States Parcel Post

(See Page [illegible])

APRIL, 1918

VOLUME XXV

NUMBER [illegible]



RELIABLE POULTRY JOURNAL

FIFTY CENTS A YEAR

Mr. Priebe Explains Limited P[illegible]

[illegible] PRESS [illegible]

FIVE CENTS A COPY

U. S. Food Administration

1396

Hastings Mechanical Draft Chick Hatchery

[illegible] Egg Incubator" History of Its Development, As Told By [illegible]—Editor of New York Daily Journal Wanted to Know Where Eggs Were to Be Obtained—Northern Ohio Is Now Relied On For the Supply—Some Business!

By [illegible] HASTINGS, [illegible]

[illegible] from which [illegible] the Mechanical Draft [illegible] of Incubating, [illegible] of the Hastings [illegible] in the center of [illegible] Hastings was [illegible] of the [illegible] of the city [illegible] is [illegible] to me that [illegible] should not depend [illegible] on the [illegible] [illegible] [illegible] of my [illegible]

[illegible] the temperature evenly throughout the storage room.

This practical demonstration of my [illegible] [illegible] in so similar a [illegible] stimulated me to develop more fully my idea of mechanical draft incubation. I resigned from the Government service with this in view and published in the spring of 1900 a book called "The Egg Book" in which I made a lengthy prophecy of the development of the large commercial hatcheries and stated that the incubator of the future would be the mechanical draft incubator, which I then described in all essential features as it has since been developed. [illegible]

EGGS

[illegible]

GARRAWAY'S BARRED ROCKS

[illegible]

WAR PRICES!

S. C. RHODE ISLAND REDS S. C. WHITE LEGHORNS

[illegible]

Halbach's White Plymouth Rocks

EGGS AND BABY CHICKS

CATALOG 10 CENTS MATING LIST FREE

H. W. HALBACH & SONS Box 5 WATERFORD, WIS.

When Others Fail, Try Nicksecker's Reds

Wonderful quality. Strong in color, deep, even, excellent markings and type. Prices right.

T. L. NICKSECKER, Red Specialist, R. R. 5, ROSEDALE, KANS.

Greenan's Imperial White Wyandottes

[illegible]

JOHN D. GREENAN [illegible]

Special Sixty Day Offer

Express Prepaid

[illegible]

HARRYSBOURG POULTRY FARM, Inc.

Dept. 2 Dunkirk, New York

12 POULTRY RECORDS

THE MILOC RECORD.

Preserve Your Eggs Now; 30 Dozen for 40 Cents

ABSOLUTELY GUARANTEED

NOBILITY WHITE ROCK

PALMER'S BARRED ROCK

D. F. PALMER & SON

Tolman Fresh Air Strain White

Day-Old Chicks and Eggs for Hatching.

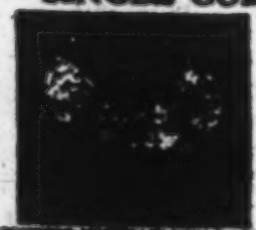
that live and give results.

WRITE FOR PRICES

JOSEPH TOLMAN

R. F. D. 1, Dept. I,

SINGLE COMB WHITE LEG



HOUSTONIA CHAMP

Red Sussex

Light

EGGS—for hatching from—

Winners at America's Greatest Exhibitions,

Leaders at American Egg Laying Contest,

BOOK YOUR ORDER AT ONCE

HOUSTONIA POULTRY FARM Dept. R South

[illegible]

No. It is unusual for a duck to lay like that in the fall and first part of winter. In the natural breeding season good ducks will lay practically an egg apiece a day, and until the last twenty or twenty-five years they almost never laid in the fall or early winter. In recent years well-fed ducks would begin to lay late in the fall, and some duck growers have hatched ducklings from these very early eggs.

Smith Standard BABY CHICKS

America must grow more poultry this year. We will help by producing nearly

2,000,000 Chicks In 1918

[illegible]

Incubator Holds Forty Tons of Eggs

[illegible]

We ship any number of chicks. These breeds—

[illegible]

Write today for complete catalog—FREE

SMITH STANDARD CO., [illegible] Street, Cleveland, Ohio

WRITE QUICK

For the BLUE HEN FREE BOOK and OFFER!

[illegible]

Curtain and Thermometer Furnished On No. 44 and No. 45 Only.

Quick action now essential to big production of poultry this season. [illegible] MORE POULTRY.

BLUE HEN COLONY BROODERS

[illegible]

BLUE HEN LAMP INCUBATORS

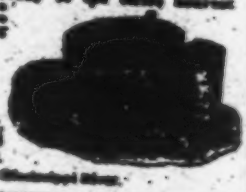
[illegible]

BLUE HEN HOVERS

[illegible]

WRITE FOR FREE BOOK AND OFFER

[illegible]



WATSON MFG. CO.

[illegible]

NOTE—Prices slightly higher west of the Mississippi River.

1400

DEFENDANT 8' EXHIBIT No. 21

DAVIS HATCHERY OF BROOKLYN, N.Y.

FIG. 1.

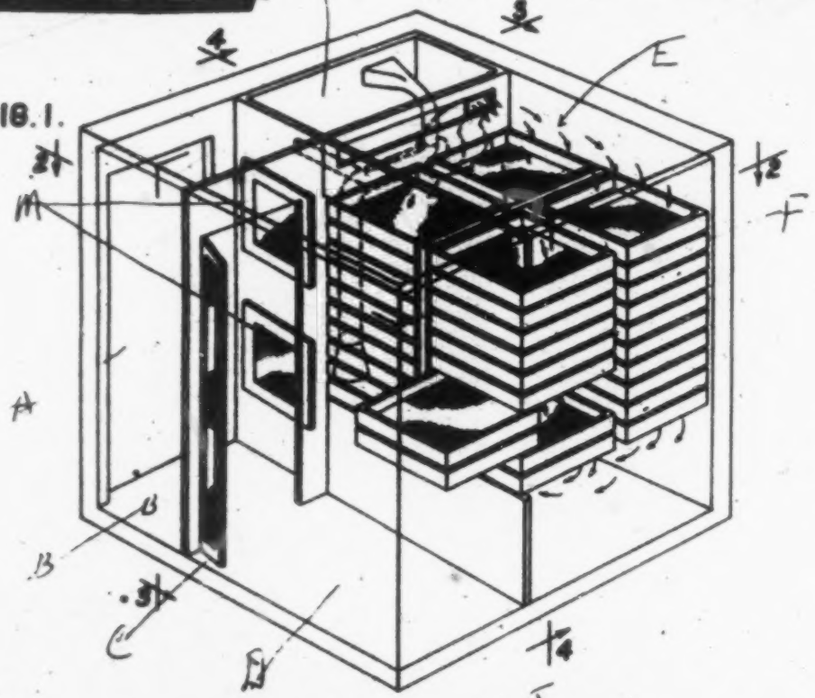


FIG. 2.

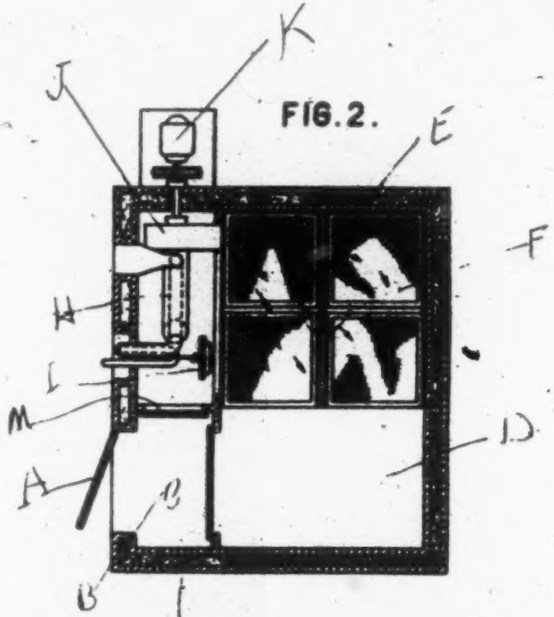


FIG. 3.

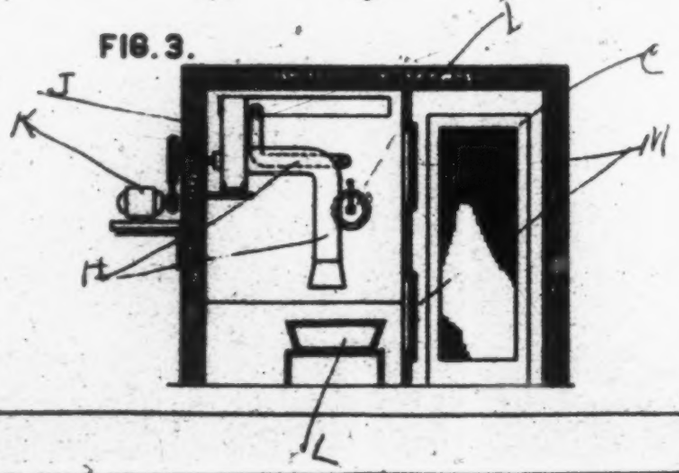
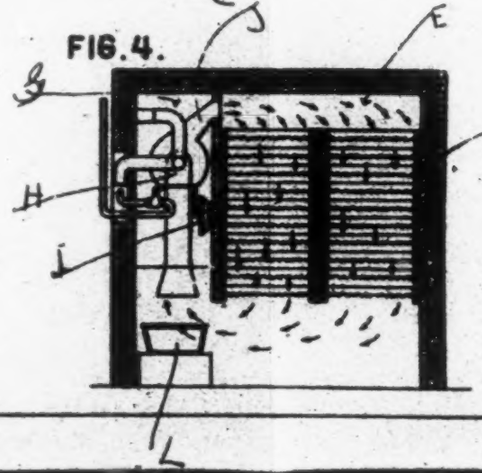


FIG. 4.



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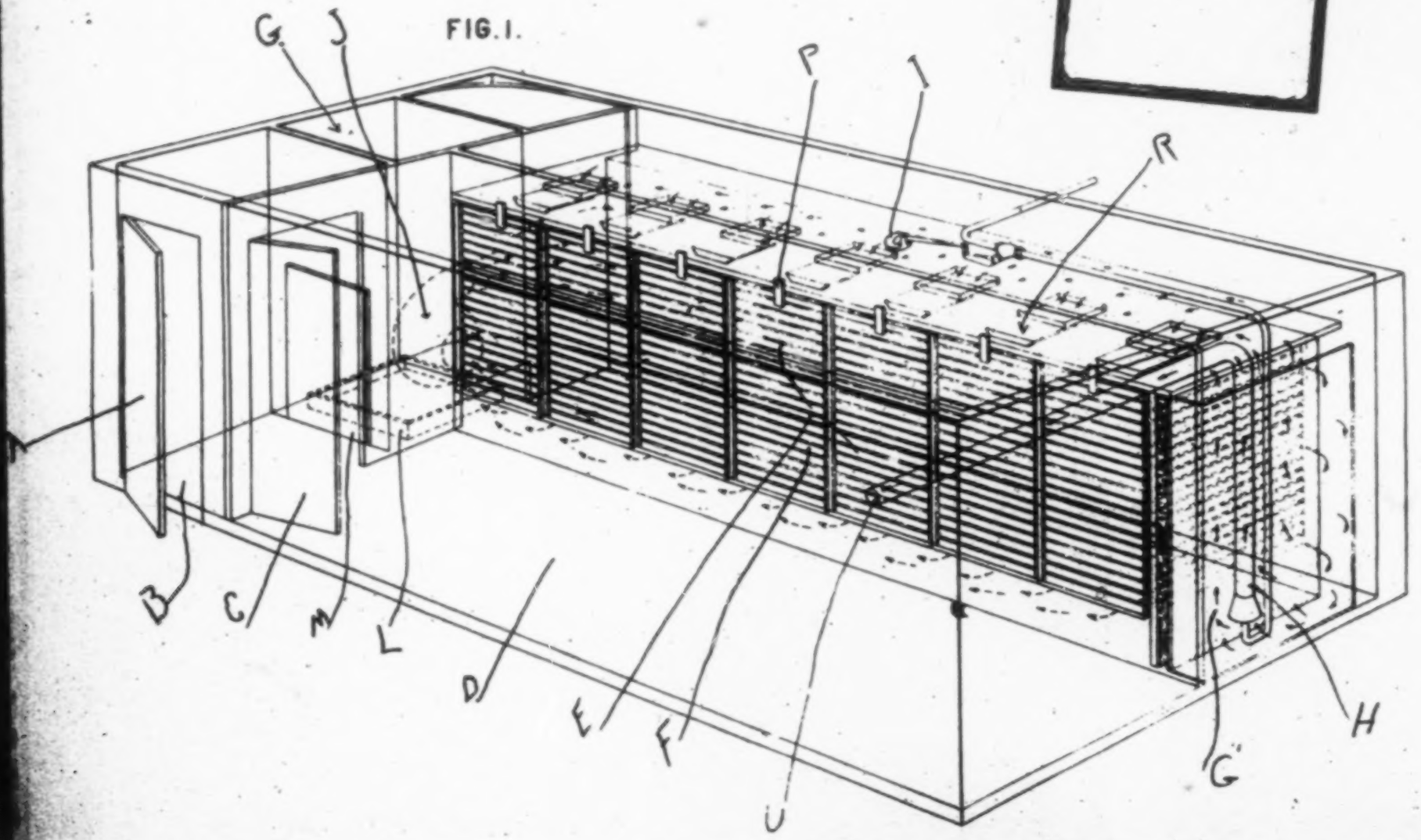
DEFENDANT'S EXHIBIT No. 22

HASTING'S MUSKOGEE HATCHERY
1911-12

Ditto Exhibit 22

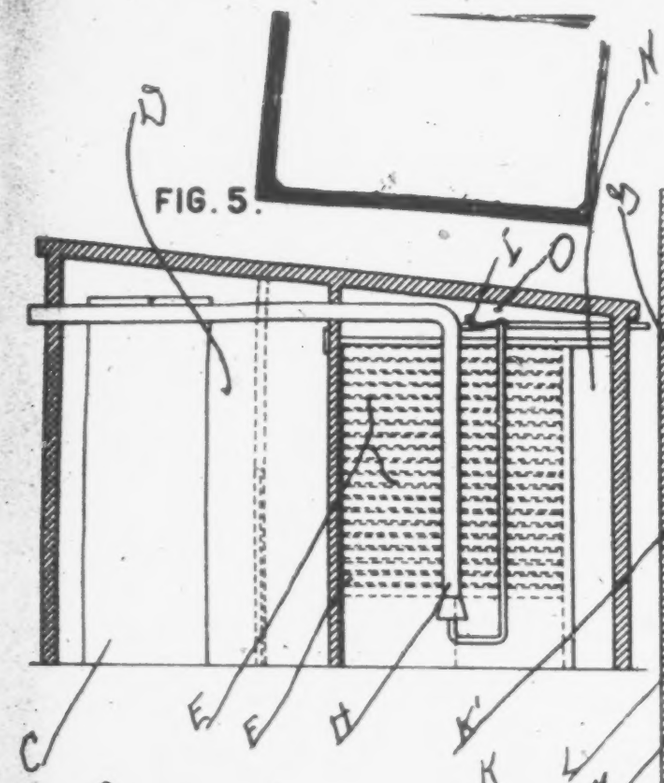
FIG. 1.



1402
DEFENDANT'S EXHIBIT No. 22 A

HASTING'S MUSKOGEE HATCHERY
1911-12

FIG. 5.



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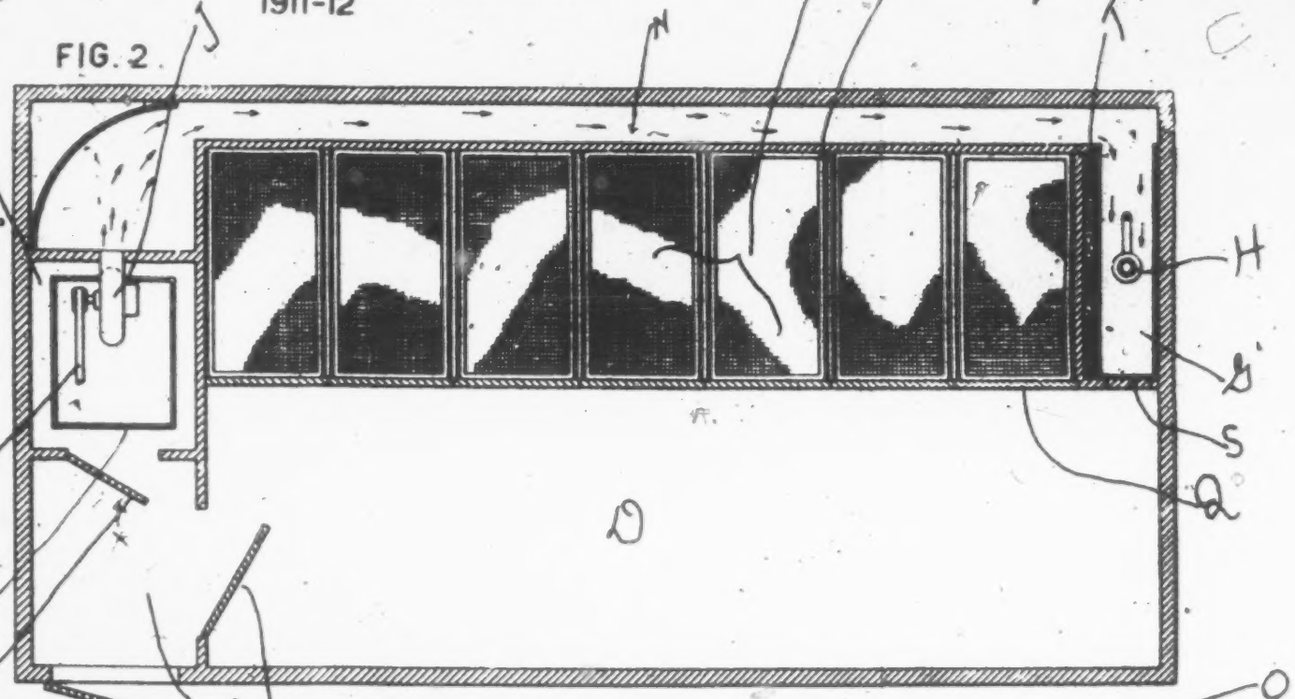


FIG. 3.

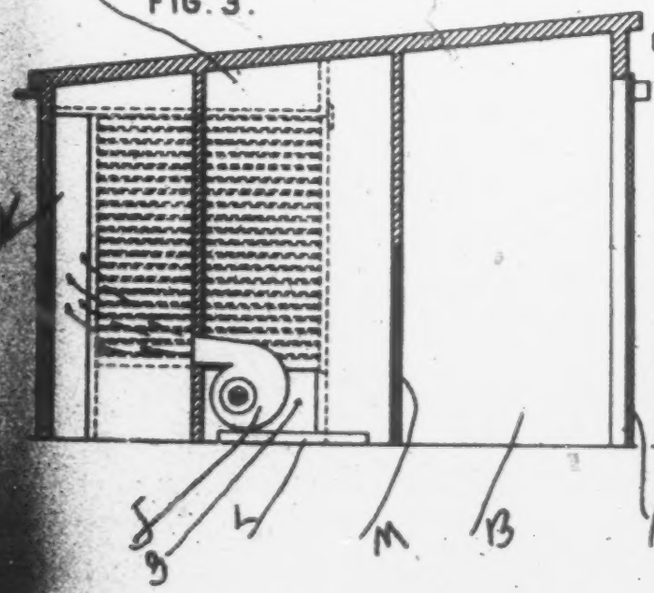
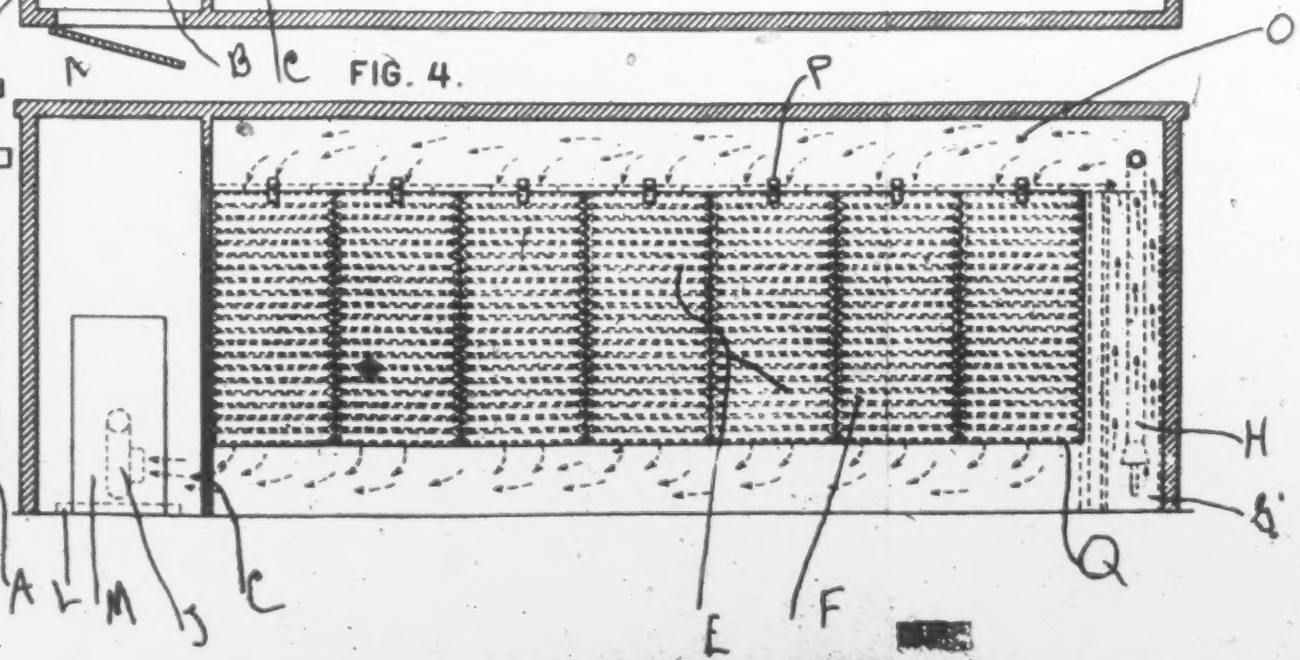


FIG. 4.



DEFENDANT S' EXHIBIT No. 22 B

DEFENDANT S' EXHIBIT No. 22 C

DEFENDANT S' EXHIBIT No. 22 D

DEFENDANT S' EXHIBIT No. 22 E

DEFENDANT S' EXHIBIT No. 22 F

THE MAMMOTH INCUBATOR OUT-MAMMOTHED

HOW MILO HASTINGS, A KANSAS PRODUCT, IS STARTLING THE WORLD WITH HIS BIG CHICK FACTORY.

By Ralph H. Smith, Associate Editor.

[illegible] incubator [illegible] and poultry [illegible] are [illegible] [illegible] [illegible]

One of the most unpractical Rube stunts shown during the past season.

the pressure is reduced by successive float governors and is burned at about one-tenth the street pressure. This gives ample heating in time of trouble. The quantity of heat is controlled by three thermostats. One is in operation all the time, giving the constant regulation necessary. A second comes into play should the temperature in the air flumes become more than one degree below normal and a fire device shuts off the gas entirely except the night flames, when the temperature goes one degree too high—an alarm bell also rings to call the attention of the attendant if the condition is large.

An attendant is on the premises twenty-four hours a day at the present time, sleeping in an adjoining room at night. As soon as the business warrants it a shift of men will be employed so that some one is at work in and about the hatchery at all hours.

As precaution against a break in the gas main company the company has on hands suitable blue flame kerosene burners to keep up the temperature, should the gas get out of order, a duplicate is ready to be lighted in its place. A shut-down in the power house would be as serious a mishap as could occur, but that too is provided against by having so arranged that the entire contents of the hatchery could be kept at incubating temperature by keeping a man on the job, frequently exchanging top and bottom trays.

All these things sound complicated, but are merely precautionary measures taken to insure thoroughbred eggs. In daily practice the hatchery runs along quite automatically, continually adjusting itself to the changing demands upon its limit-

My Incubator Is Wonderful! Just Takes One Gallon of Oil to a Hatch

J. H. KATE
President

AND there are a hundred other reasons why it is *entirely different* and remarkably *better in principle* —miles ahead of *every one of the old style machines* on the market. First—because I put the lamp on my X-Ray incubator underneath, square in the center, where it belongs—and not on the side. Then there's no cold side—but there *is* an even, regular temperature of heat all over the egg-chamber *all the time*—such a perfect hatching temperature that I can *guarantee* you bigger and better hatches every time! In placing my lamp underneath I gain a mighty big point. I make it possible to use a *big* oil tank—one that holds from 4 to 5 quarts of oil—but just 4 quarts are needed for a hatch—that's another thing I can *guarantee*. My perfected automatic trip—an exclusive X-Ray feature—accounts for this great saving of oil! It cuts down the flame *at the burner* when the egg-chamber gets too hot—so there's no excess heat escaping all the time and eating up your fuel—causing smoke and smell as with other machines—no waste of money in my—

X-RAY INCUBATOR

"Built Different from all Others"

the *best hatching* one on the market. The absolutely different kind of my machine is unquestionably just as important a feature as my perfect heating system. The lid has *two* double-glass panels and you simply take it to ventilate or turn the eggs. Eggs are never taken out of my X-Ray incubator—remember that! You can test the thermometer *any minute at a glance without raising the lid*—and testing cold air in—look right through the glass.

Requires Only One Filling of the Lamp

Instead of wasting heat—it *saves* it. The X-Ray uses only one gallon of oil—others waste have 3 to 5 gallons and they have to fill their lamps *every single day*. To use my X-Ray incubator means less handling of eggs, far less oil expense, less heat generated, absolutely no waste whatever of heat or oil. No filling of lamps during the hatch. No burner—longer of "cooking" eggs—always an even temperature in the egg-chamber. Eggs need not be removed during entire hatch. [illegible] the most wonderful hatch ever produced. It's the most wonderful hatch on earth—it's the only hatch you have ever seen—through ordinary dried down.

The Only Improved Incubator and Brooder—Get Free Book!

If you are going to get an incubator or brooder, or both, why not get the most improved, most up-to-date machine that is made? Why not get one that's built on the principle that you want incubation of vitality? You want to get the most chicks from your eggs—you want to get the most profit from your chicks. You want a machine that will do the work with the least trouble. You want a machine that will do the work with the least trouble. You want a machine that will do the work with the least trouble

DEFENDANT S' EXHIBIT No. 24

Popular Mechanics Magazine

318 W. Washington Street, Chicago, U. S. A.

EDITED BY H. H. WINDSOR

ISSUED MONTHLY

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Popular Mechanics offers no premiums; does not join in "clubbing offers," and employs no solicitors to secure subscriptions. It is for sale by nearly every newsdealer in the United States and Canada.

THE ELECTRICAL CULTURE OF CHICKS

One of the most interesting features of a 30,000-egg electrical hatchery at Muskogee, Oklahoma, is the method of forcing the growth of chicks by the aid of electric light. A 60-watt tungsten lamp, which, by means of a special switch, is turned on and off for alternate periods of eight hours each, is suspended in the runway. The chick fills its craw in the eight hours of electric illumination, and rests during the eight hours the light is shut off. Thus, the chicks live three electric days in two ordinary sunshine days. In the customary way of brooding chicks, eight hours out of the 24 are wasted, or to express it electrically the load factor is 66 per cent. The electric outfit, however, is run at nearly 100-per-cent load factor, and electric chicks four weeks old far outweigh chicks brooded in the old way.

The fluffy kilowatt-ampere chicks never see the light of day if they are only destined to reach the stage of development known as "squab broilers." They are electric squabs pure and simple, and their lives have been strictly ordered by a time switch and a tungsten lamp. They would hardly know the good old-fashioned hen mother if they saw her. They would not, in all probability, respond to her agitated clucks, for their life schedule has been to eat eight hours, rest eight hours, then eat again for eight hours, and thus gain eight hours on Mother Nature.

The hatchery is a low brick building about 20 ft. square, and the large capacity of

Chicks just Hatched in Electric Incubator, on the Way to Electric Brooder

the incubator is attained by placing 30 trays one above the other, so that 1,800 eggs fill a single chamber about 3 by 4 by 4 ft. in dimensions. This arrangement of the trays is made possible by the use of an electrical fan, which drives a blast of warm air through the mass of eggs from top to bottom, and heats or cools the mass at the will of the operator. A duplicate fan is kept always at hand, for a sudden stop in the movement of warm air among the trays would result in all the eggs having to be thrown away. Reliability of current is, therefore, a big feature of the success.

THE NECESSITY FOR SPEED-BOAT COSTUMES

Racing automobilists and airmen are adequately provided with costumes fitting the requirements of each, but, as yet, the driver or pilot of the racing motorboat has not been given special attention in this matter. That the hydroplane driver is very much in need of an adequate costume, however, is clearly shown in the accompanying illustration. Seated on the stern of the "Al Thomas, Jr.," a speed boat of the east, is one of its pilots. He is wearing a pair of socks, a bathing suit, a life preserver and a pair of automobile goggles.

WHERE THE WORLD BEGINS

The beginning of the world, all pessimists to the contrary, is the center of a door of the Royal Observatory at Greenwich, Eng. The transit circle which marks the zero-meridian passes directly through the center of this door

The Center of the Door is the Beginning of the World

which is the middle one, and is opened when an observation is being made. The center of the door is thus 0 deg. longitude—the beginning of the world.

FIREMEN AS WALKING FOUNTAINS

A German inventor proposes turning the firemen of Berlin into walking fountains in the manner shown in the illustration. He claims that the water-spraying device worn on the head, and fed by a second hose, makes it safe for firemen so equipped to approach much closer to the flames than under ordinary conditions. He calls the idea a "wet uniform."

The "Wet Uniform": A Fireman Converted into a Walking Fountain

ELECTRICITY IN THE WORLD'S LARGEST INCUBATOR.

Muskogee, Okla., has a 350,000-egg incubator, the heat control and air circulation for which are effected by electrical means, while the growth of the chicks is artificially forced by tungsten electric light. Use of motor-driven blowers to circulate the air heated by natural-gas burners has made possible the compact construction of this hatchery, the egg trays of which are superimposed on racks twenty deep. Five thousand eggs can thus be handled and hatched in a space 3 ft. by 4 ft. by 4 ft., requiring only about one-tenth of the volume demanded by the old-style incubators. After hatching has begun trays with high sides are substituted for the incubating trays, each high-side tray occupying the space of two of the ordinary trays.

Although the idea of converting the whole building into a hatchery, with superimposed open trays for the eggs, is said to be new, according to Mr. Norman B. Hickox, contract agent for the Muskogee Gas & Electric Company, the use of a motor-driven blower at Muskogee to force the evenly heated air to all parts of the tray racks has for the first time made this method practicable on a large scale. Humidifying of the air is controlled by passing it over open pans of water, as shown in Fig. 2. A home-made thermostat controls the natural-gas supply to the burners through a mercurial valve, keeping the temperature in the incubator constant at 100 deg.

In the runways electric light has been used to force the growth of the chicks with surprising success, says Mr. Hickox, the scheme being to substitute sixteen-hour artificial days—with eight-hour light and eight-hour dark periods—for the natural twenty-four-hour cycle. As explained by Mr. Hickox, the chick of this forcing is quite rational. The chick naturally eats during hours of light, and his craw digests the food after dark. In eight hours he can eat all the food needed, and in another eight hours

Fig. 1—Mr. Norman Young With

a grown his little crew will have fully equipped to venture. "It follows," as quoth Mr. Hickox, "that under the ordinary way of brooding the chick is fed eight hours out of the twenty-four, or, to express it diagrammatically, his feeding-factor is only 33 per cent. Mr. Hendrix, the owner and inventor of the hatchery, thus runs his chicks at nearly 100 per cent load-factor. In this way live three electric days during sunshine days, and the four-week-old

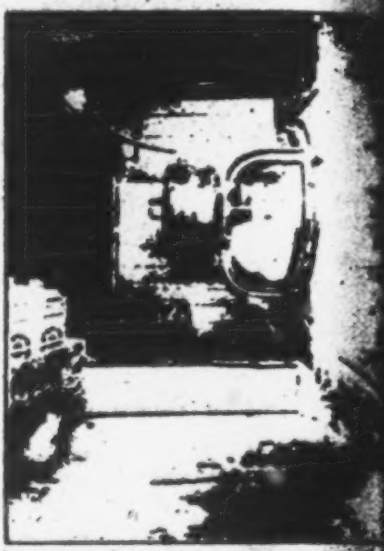

Fig. 2—Motor-Driven Blower for Heated Air

chicken will far outweigh his normal brother 66 per cent load-factor fashion."

MINE GENERATING PLANT AT MOGOLLON

An interesting generating plant has recently placed at Magdalen, N. M., for the Socorro fully equipped for furnishing both electric and air mine service, with all engines as prime The plant housing consists of very simple construction one-story, wood-frame, iron-sheathed building plan 60 ft. by 80 ft. over all and open interior. The equipment consists of one 250-hp twin oil engine a 150-kw, 500-volt alternating-current generator hp twin oil engine belted to a 100-kw, 500-volt current generator, and one 250-hp twin oil engine countershaft which in turn drives two 50-hp air compressor and one 75-kw, 120-volt direct-current. An auxiliary drive for the compressors is obtained by a belted 150-hp, 500-volt induction making it possible to keep the second 250-hp in reserve.

The engines operate on crude oil, of a gravity of 25 deg. Baumé, fed through a 3-in. supply line from gas-oil, which buried underground 100 ft. from the engine. An auxiliary gasoline tank, with pump, is provided to the main supply line to each engine, for use in starting in case none of the tanks is operating. For starting conditions an engine unit receives its power by using the belted motor as a motor, which picks up under its own power. The transformer supply for the motor is taken from the 120-volt mine supply. This plant forms a self-contained unit for mine operation, furnishing current and alternating-current supply and lighting, motor and compressed air service.

[fol. 1411] DEFENDANTS' EXHIBIT No. 26

(This item is the Hickox Album called for as a physical exhibit but Exhibits 26-A, 26-B, 26-C, 26-D, 26-E, 26-F, and 26-G, are excerpts from that album.)

DEFENDANTS' EXHIBIT No. 26-A

Visitors of the Oklahoma State Poultry show for 1911, when in Muskogee, had an opportunity to visit Muskogee's 30,000 egg incubator. The hatchery is itself a building, and the attendants and visitors do not look into the incubator—they enter it. It is a low, brick building about twenty feet square, such as could conveniently house about eight of the largest size old-style incubators, which would give a capacity for hatching about 3,000 eggs.

Under this roof can be hatched 60,000 eggs at one time, although accommodations for 30,000 are now all that are needed. The full 60,000 capacity can be ready for work, however, upon a few days' notice. The large capacity is attained by superimposing twenty trays, one above the other, so that 5000 eggs fill a single chamber measuring about 2 by 4 by 4 feet. Figures 5 and 7 show how these chambers are constructed and how the trays are set in.

When the hatching begins, alternate trays are fitted with high sides which will require two compartments for the actual hatching out of the twenty trays incubated in one compartment. Figure 4 shows the attendant removing the hatched chicks from one of the hatching trays.

The big idea in the hatching business is to get cheap chicks; and space economy, such as this mammoth incubator gives, along with the low cost of equipment, will tend [fol. 1412] to not only produce cheap chicks, but more chicks, and stronger ones.

It is a very simple idea, that of placing the trays one above the other, and like all other simple ideas it has been tried before, but failed to work on account of the fact that it was hard to heat up such a large mass of eggs and maintain the temperature constant at all points. This was overcome, however, by the use of an electrical centrifugal fan, which drives a blast of warm air through the mass of eggs

from top of bottom and heats the entire mass of eggs (or cools it) at the will of the operator. The amount of moisture in the air is governed by the moisture introduced at the fan, as is shown in Figure 2.

Upon entering the hatchery we are first taken into a small ante room, as shown in Figure 1. The natural gas line which furnishes the gas for heat is shown on the wall and passes through a mercurial float valve, which is automatically controlled by the thermostat of home-made construction. This thermostat is set to operate at a desired temperature so as to close off the gas when the room becomes too hot. There are two other such arrangements on the same line, one of which is shown on figure 6. These are merely to check each other, so as to insure the gas being shut off when the temperature rises, and make a positive prevention against ruining many valuable eggs. The man in the picture is Mr. Hastings, inventor and builder of the hatchery. This is the process of testing the eggs for fertility.

The ante room contains a compartment, shown in figure 2, in which is placed the ventilating fan, the life of the in- [fol. 1413] cubator. Outside air can be admitted to this compartment whenever necessary. This also shows the pan of water underneath the fan, to keep the moisture in the air at the right amount. This fan is supplied by central station service, and the owner of the incubator keeps a duplicate on hand at all times to immediately put in place should a break-down occur. As a stoppage of ventilation would make it necessary to throw away all the eggs in the incubator and start over again, it will be seen that the dependability of the central station service is the biggest point of the whole process.

From here we enter the main incubator, in which the temperature is always kept at 100 degrees. The attendant will be seen in figure 3 pulling out trays of eggs for turning, which is done three times a day by hand. In this runway the first experiments in forcing chicks by aid of the tungsten lamp were carried on. By a special time switch light was furnished the baby chicks for eight hours, a 60-watt tungsten lamp being used, and then their light was shut off for eight hours.

It has often been said that nature is not everywhere perfect, and in this case it is found possible for the baby

chicks to live three electric days in two ordinary sunshine days, as the chick can fill its craw very easily in the eight hours of light, so its digestive organs perform their functions in less time than eight hours. Under the ordinary way of brooding chicks it can thus be seen that there is eight hours out of the twenty-four that the chick is idle, or to express it electrically, the load factor is 66%. We are always striving for business at a high load factor, so [fol. 1414] you can readily see that our friend Hasting runs his chicks at nearly 100% load factor, thus resulting in an efficiency so increased that the electric chick four weeks old by far out-weighs his (or her) brother or sister brooded in the old way at 66% load factor. The following article taken verbatim from the columns of the Muskogee-Times-Democrat of February 26 contains a true story of some of the strange actions of the four-weeks old electric chick, when he (or she) first sees the light of day:

Electric Light Chickens

"Miss Kilowatt Ampere Whiteleghorn has made her, or his, according to the point of view as they all look alike in the first stages, anyhow, appearance in Muskogee.

Miss Whiteleghorn is a chicken and she is named from her, or his, mother, Mrs. Kilowatt Ampere. She, or he, was hatched under electric light in the new Hastings 30,000 egg hatchery on Third Street, just north of the Hinton Theatre.

He, or she, has hundreds of little brothers and sisters, and a few of them were sent out to citizens as samples of what a mother hen cannot do. They have reached the stage where they are known as squab broilers, not because they were born near the Hinton Theatre, but because they are a different breed from stage broilers.

They had never seen the light of day before being sent out, and to say that they were bewildered is putting it mildly. They are electric broilers pure and simple, and used to the Great White Way.

[fol. 1415] One citizen put him in the cellar where there was no electric light and where the light of day was the only thing in the way of radiance. The chick went around like a hen with its head cut off, and protested in all kinds of chicken talk as forcibly as a chicken can protest. As a result the owner of the house turned on the electric light.

The chick gave a series of delighted cheeps, tucked his, her, head under his, or her, wing and dropped off peaceful to sleep. Who says a chicken hasn't sense!"

To profit by the free advertising brought forth and keep it in the "psychological" stage the writer had accompanying cartoon drawn up, which was run in sp furnished free by the editor.

Figure 4 shows Mr. Hastings removing the hatch chicks from one of the hatching trays. Figure 5 show tray of eggs as they look when put into the hatche Figure 6 shows another of the thermostatic gas mercu float valves. The arrow in this picture points to the ho made thermostat which makes contact in a cup of mercu Figure 7 shows a tray of chicks just coming out, and top of picture can be seen the vents out of which come air driven by forced circulation. Mr. Hastings intends build a million egg hatchery and carry out his experime on a larger scale. His present ventures have all prov profitable, and there is no doubt that all of his future pla include the use of the convenient natural gas supply a also of central station electricity for power and the broo ing of chicks.

DEFENDANT S' EXHIBIT No. 25 B

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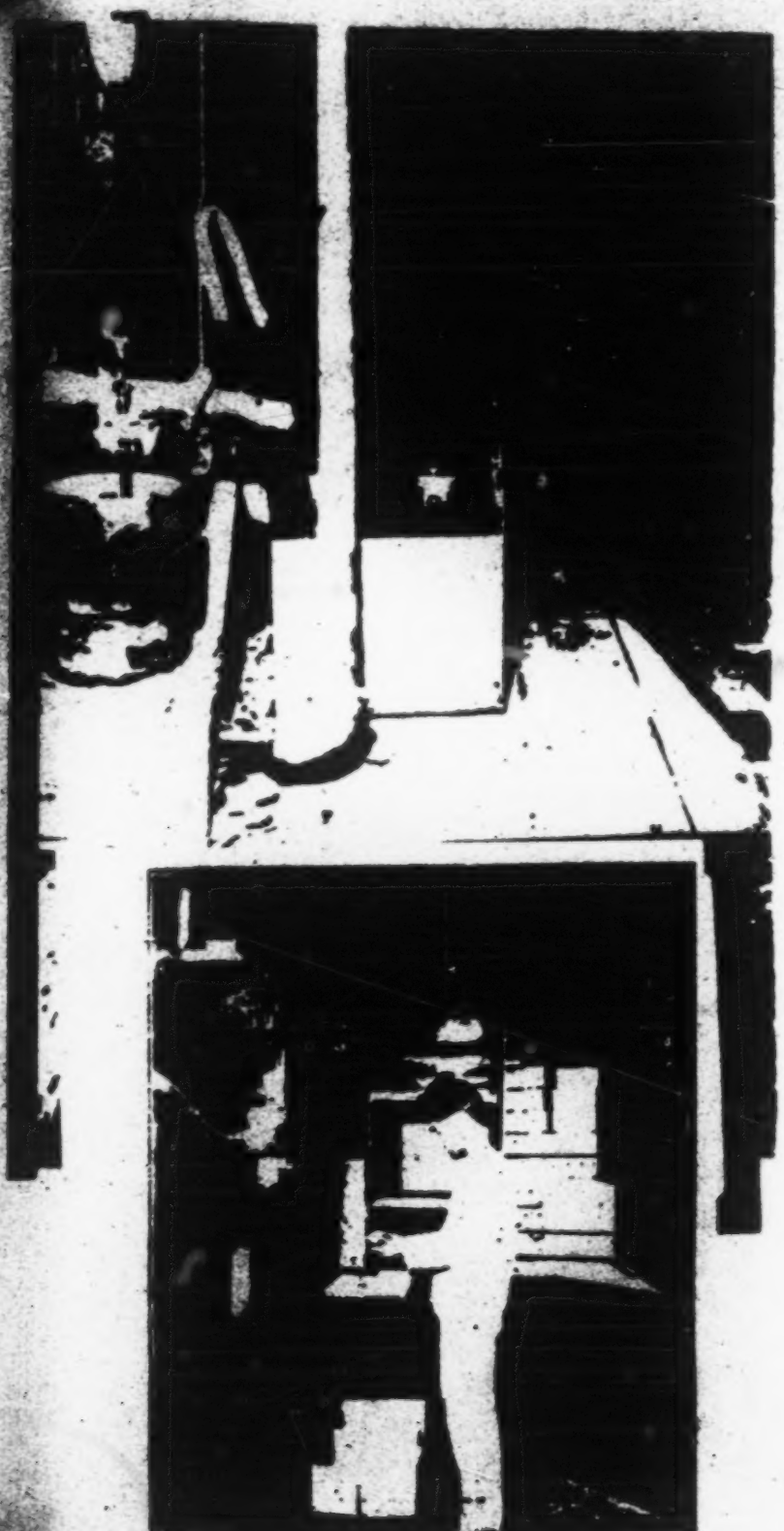
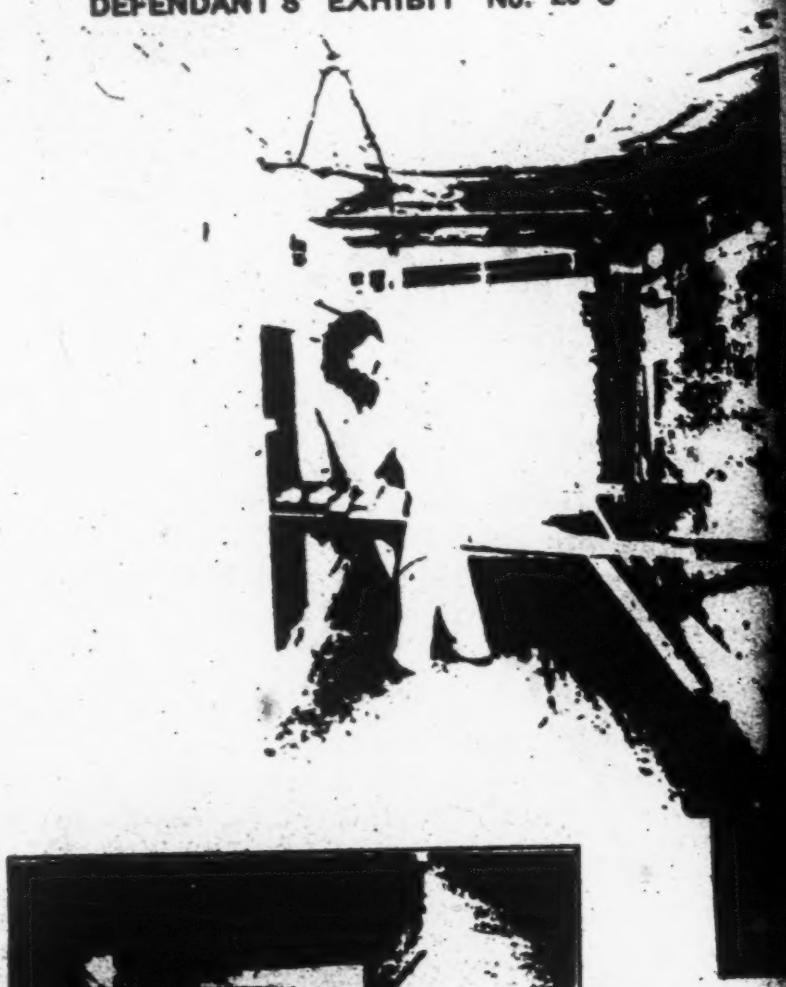


Fig. 1—Mr. Hastings Testing Spgn.

1416

DEFENDANT S' EXHIBIT No. 26 C



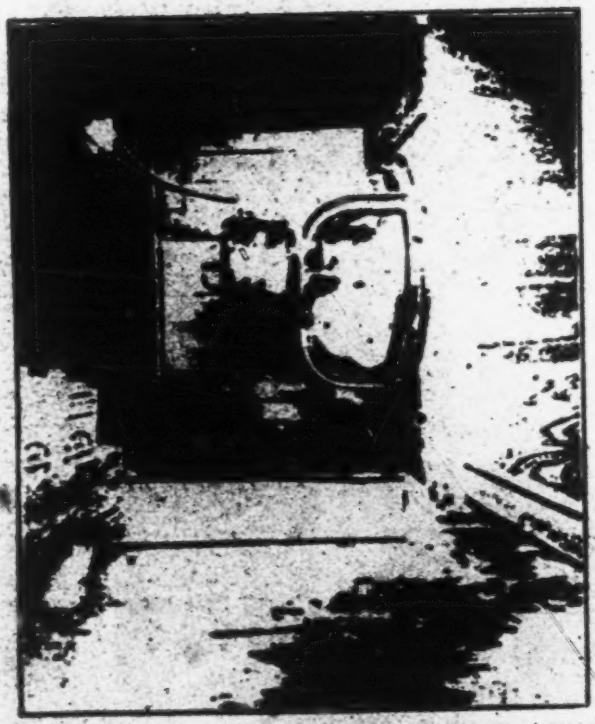
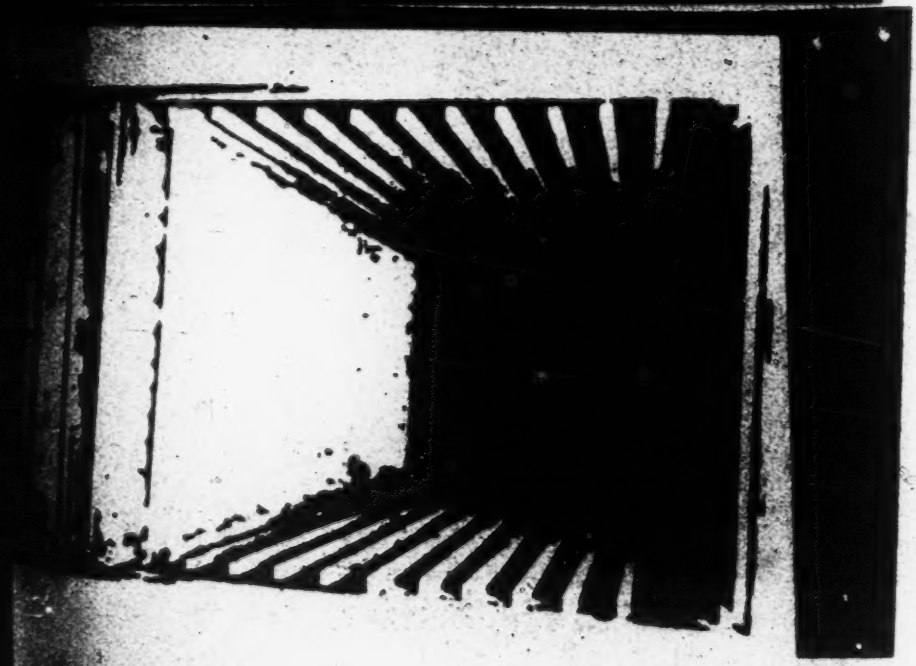


Fig. 3—Motor-Driven Blower for Heated-Air Circulating

DEFENDANT S' EXHIBIT No. 26 D



DEFENDANT S' EXHIBIT No. 26 E

Largest Chicken Hatche[illegible] In the World in Musk[illegible]

In the heart of the city of Muskogee, not a stone's throw from the city jail, is located one of the most remarkable egg hatching incubators ever seen in this country. Nothing else like it exists. In a little room, no larger than an ordinary good sized house closet, [illegible] eggs are daily going through the incubating process and thousands of [illegible] covered and bespotted little [illegible] looking for all the world as though they had just stepped out from an Easter egg, any busy scratching around with never an indicative thought of an old hen mother.

This wonderful invention is a child of the brain of Milo Hastings of Kansas, formerly a newspaper man in New York City. He thinks more of it than a [illegible] mother does of her chicks. It is his dream to make Muskogee the great poultry hatching center of the country, and after traveling through thirty-seven states as a government expert for the department of agriculture, he has selected Muskogee as the ideal spot for the establishment of a million egg hatchery.

The idea is mammoth in point of numbers, but not mammoth in point of size. Such an hatchery, built after all plans, would require a floor space of only 50 by 100 feet, and then there would be ample room for offices and shipping purposes. Built of concrete and steel with only a single floor level the expense would be nominal and the returns [illegible]. Within a radius of [illegible] miles of Muskogee hatched chicks can be shipped for less than one half [illegible] per chick. In this territory [illegible] are ideal locations for one hundred or more egg farms which would give an egg supply of one hundred million eggs and [illegible] per cent of that supply would keep the hatchery busy at all times.

The cost of hatching eggs under the Hastings plan is about one cent per egg. There are in this country two 120,000 egg hatcheries and a number of 100,000 hatcheries. Every one of them is profitable and they consist of large buildings in which are housed many small incubators. The cost of equipment is ten cents per egg capacity. For practically the same cost an incubator with a million egg capacity can be constructed under the Hastings system. As an investment, even if the machine was not filled, the advertisement accruing therefrom would be worth the consideration of any city.

Established in Muskogee, chicks could be shipped to Texas in January and February, and to Kansas in May. The intervening months of April and March would supply this section for midwinter consumption. The field in which the markets could be supplied is unlimited, Kansas City, St. Louis, New Orleans, Dallas, Fort Worth, Houston, Joplin, Wichita, Topeka and many other sections.

The hatchery in itself is a building. Visitors do not look into it, they stop right in and view the interesting process. The Muskogee plant is about [illegible] feet square and has a capacity of [illegible] eggs. This result is obtained by superimposing twenty trays, one above the other, in each compartment, the compartments being arranged along the wall, and each tray having a capacity of [illegible] eggs. The hatching compartments have a working capacity of 10,000 eggs per week.

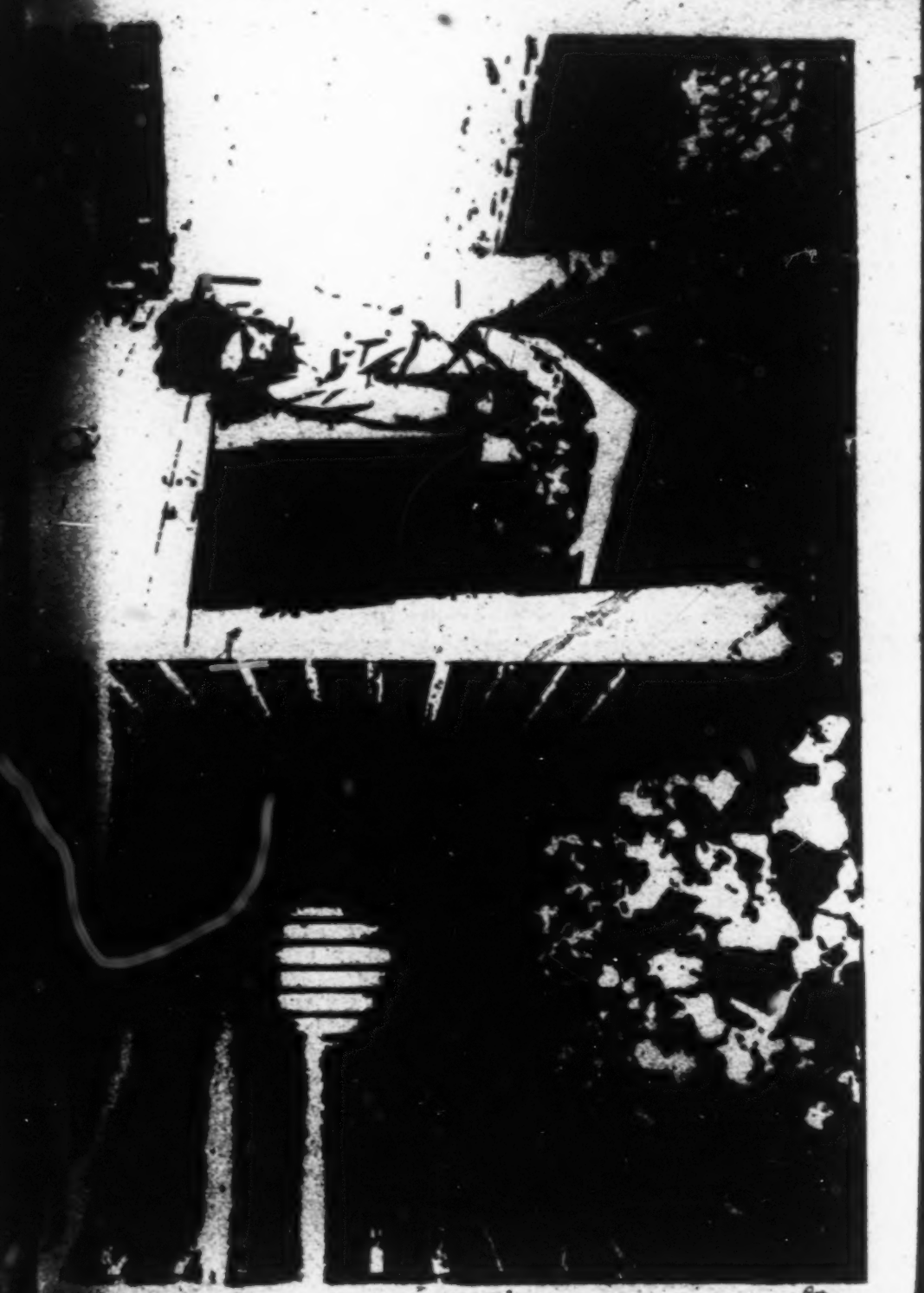
The immense economy of space is alone sufficient to make the Hastings machine the wonder of the poultry world, but space economy is only one of its wonderful [illegible] hatching chamber is [illegible] sides. A draft of [illegible] centrifugal fan, is [illegible] bottom. The [illegible] completely overcome [illegible] stratification of the [illegible] and at the same time [illegible] the entire [illegible] result of this simple [illegible] principle long [illegible] Hastings [illegible] Top heat, following [illegible] ture in hatching, is [illegible]

Mr. Hastings has [illegible] not with the idea [illegible] capacity egg [illegible] he now has, but is [illegible] in the plan for a million [illegible] that will make [illegible] Largest Egg Hatching [illegible] World, but as the [illegible] now, the Largest [illegible] in the World in point [illegible] The Smallest in point [illegible]

The opportunity [illegible] part of an [illegible] that means [illegible] Muskogee county [illegible] their midst and [illegible] most thorough [illegible]

DEFENDANT'S EXHIBIT No. 26 F

1129



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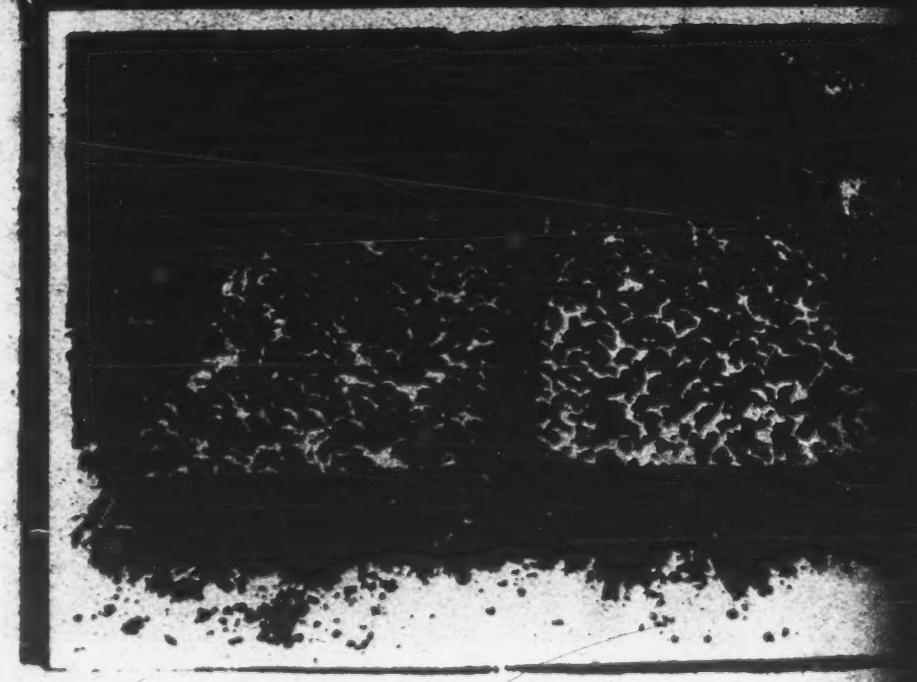

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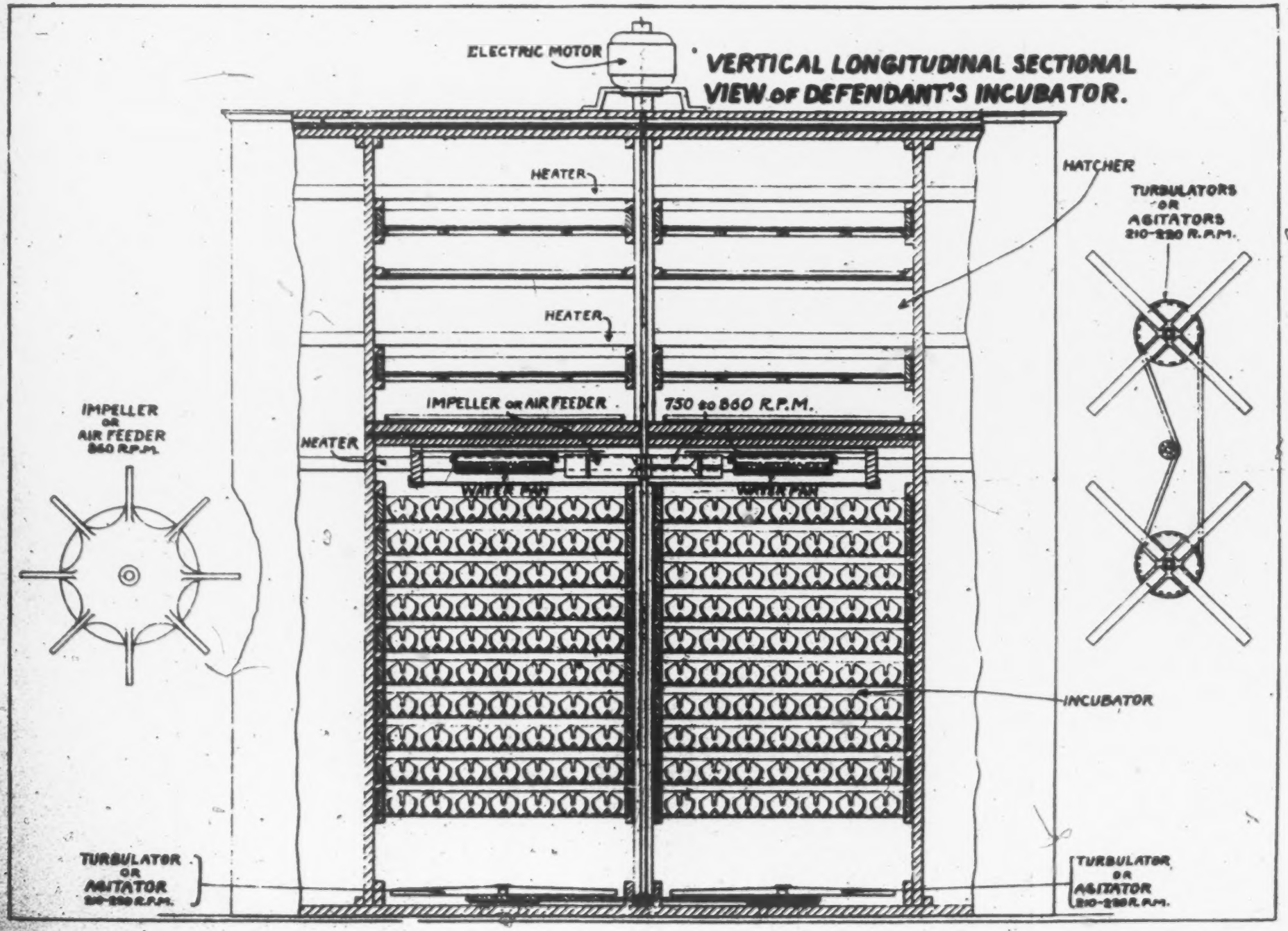
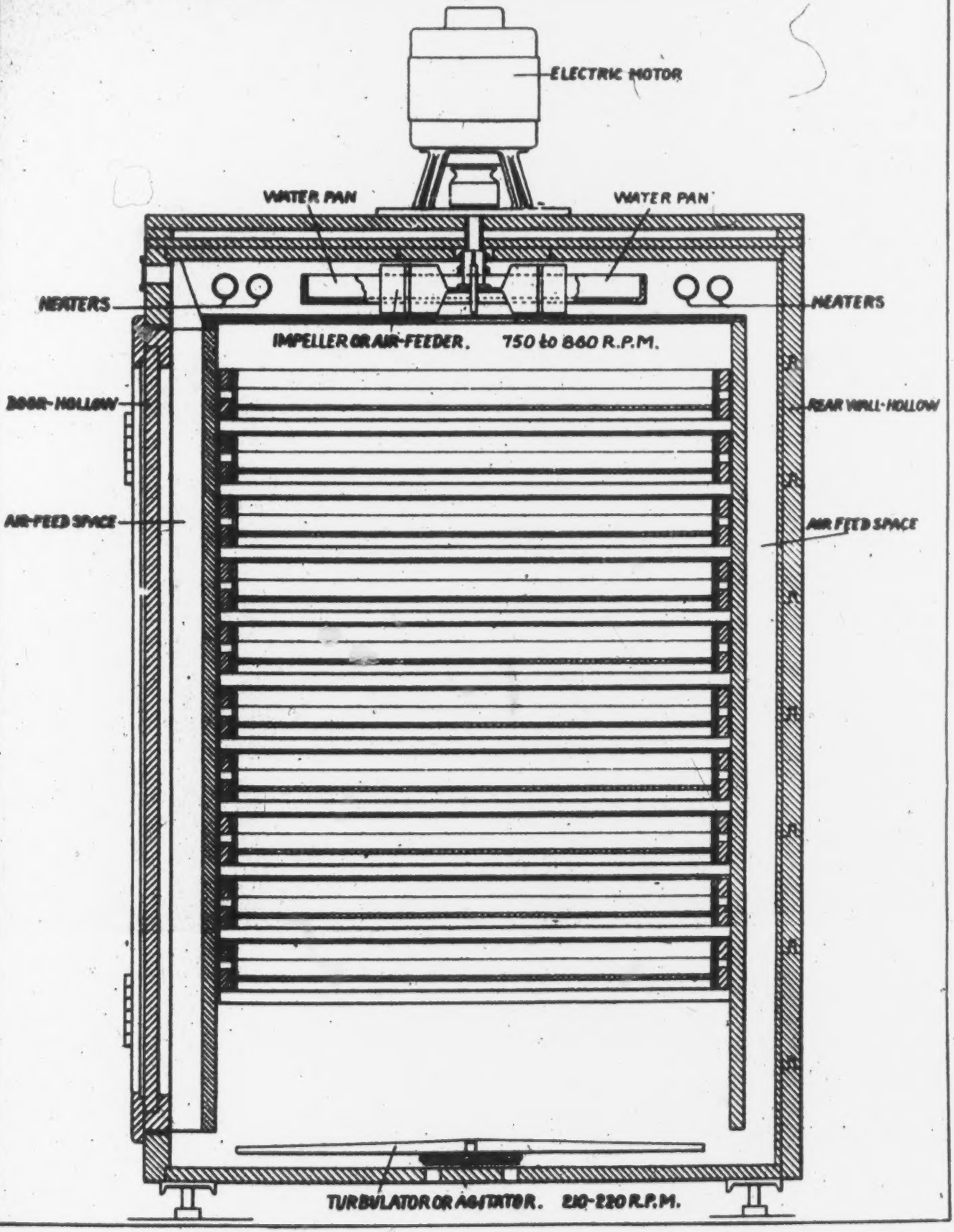
DEFENDANT 8' EXHIBIT No. 33

DEF. EXH. 33



VERTICAL CROSS-SECTION OF DEFENDANT'S INCUBATOR.



DEFENDANT'S EXHIBIT No. 34 1423

1132

Now is the time to Tighten Up

Never has it been so necessary to stop the leaks in business. Competition is keen. Prices are lower. Profit margins have been reduced. Most hatcheries are faced with this problem—to stay in business they must produce a better quality chick or produce them for less money. Undoubtedly, your hatchery has leaks. What can you do to stop them? Read on and see how up-to-date Smith Equipment will help you.

Tighten Up On Lost Customers

THE lost customer has assumed new and unusual importance in the hatchery business. There was a time when the hatcheryman did not need to worry about lost customers. There were more customers than chicks and when one customer disappeared, two sprang up to take his place. Times have changed. We see hatcherymen suffering because of lost patronage. Some hatcherymen who failed to conduct their business properly have disappeared entirely from the hatchery field. Today, we are in a competitive situation where a lost customer is a tragedy and where too many lost customers will lead to a business failure.

In the old days, when a large percentage of hatchery business came by mail, the lost customer was more easily replaced. Today, most successful hatcherymen depend largely on local trade for their success. Where your most profitable block of customers are to be found within driving range of your hatchery, the importance of maintaining the patronage and good will of these customers is of major importance.

If you sell chicks that are not properly hatched, death losses must follow and you will lose customers which cannot be readily replaced. Today, no hatcheryman is in position to gamble wrong ways. His product must hold the losses trade or he will be out of business. Many hatcherymen who have Smith Incubators alongside machines of other types frankly say that they reserve the Smith-Hatched chicks for their home trade. They realize the importance of satisfying their home customers and have learned that Smith-Hatched chicks are best for that purpose. *TIGHTEN UP—Smith Equipment Makes Satisfied Customers And Is The Cheapest Business Insurance Any Hatcheryman Can Buy.*

Tighten Up On Disease Spread

MOST successful hatcherymen are fumigating regularly and thus [illegible] disease spread. Remember that disease spreads in the [illegible] only as hatching eggs and from one chick to another. [illegible] spores are only released after the chick pips the shell. [illegible] a separate hatcher or in any other type of an incubator [illegible] the disease germs from being released from infected [illegible] chicks hatch. Proper fumigation will kill these germs [illegible] the chicks dried and before the germs can be carried to other [illegible] Disease germs are tiny, invisible spores which ride on dust [illegible] "drawn". The "drawn" itself, which is always present [illegible] are harmless in any household to the chicken. The [illegible] germs, are a problem in incubators with any infant type [illegible] of incubation. They can only infect chicks after they pip [illegible] chicks with just their separate hatcher or any type of an [illegible] and prevent the spread of disease by either trying to outbreed you [illegible]

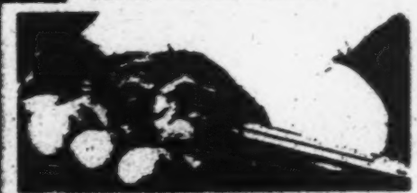
Tighten Up Get Rid of Unprofitable Equipment

ONE of the reasons given by Andrew Carnegie for his success as a steel leader was the fact that he never hesitated to scrap unprofitable equipment. His biographies tell of his building a new mill and ordering the entire mill torn down and rebuilt before he had ever used it to handle a pound of steel, because a more profitable process had been discovered. In small affairs, as well as in large, this same principle holds. A machine which causes loss should immediately be discarded and replaced by one which produces profit. Unprofitable equipment will overcome the hard work of the hatcheryman. It piles loss upon loss until it eventually sinks the business.

Follow the lead of the men who think clearly in business and discard a losing proposition immediately. Many incubators are not producing what they should in the way of salable chicks. Put a Smith machine to work in the space occupied by this unprofitable equipment and it will soon pay for itself and give you money besides.

Tighten Up On Chilled Chick Losses

WHEN we put a chick thermometer in the metal opening of a hatching chick under varying conditions, we discovered facts which we hardly believed ourselves, but which careful checking has proved to be correct. In experiments we exposed chicks that had just pulled out of the shell to a hatchery room temperature of 67° for two minutes. At the end of this period, we found that these newly-hatched chicks were chilled 20 or more and, in many cases, the body temperature was as low as 88°. It is not necessary for us to dwell on the fact that such chilling carries the utmost danger to the life of the chick. Even though death may not result, growth is retarded and losses are bound to follow. Can you afford to produce chicks which are not protected at all times from chilling temperatures?



A SMITH INCUBATOR NEVER CHILLS CHICKS

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MANY a hatcheryman has met with failure because of poor hatches. Obsolete and inefficient equipment has caused him to lose that extra five or ten percent which makes the profit. In the old days, sufficient margin existed between the production cost and the selling price to permit a low percentage of hatch and still have a profit, but now such is not the case. Today, chicks are produced on a smaller margin of profit. Hatcherymen who operate a Smith machine alongside other equipment have

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Fumigation Protects You

Do not be misled by statements that fumigation is harmful to the chicks. On the contrary, if properly done in a Smith, it is actually *beneficial* and *inexpensive* [illegible]. The Smith Incubator is so constructed that the fumigating germs are carried quickly and uniformly to every part of the machine. The whole process is under control at all times, and it is not necessary to open the machine to carry on the work. The Smith Incubator has proven to be more easily and effectively fumigated than any other machine made.

Tighten Up

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If you are a hatcheryman who does custom hatching, you are fully aware of the awkward silence which greets the announcement of a poor hatch. You are also aware of the pleased smile which greets you when you bring out more chicks than the customer had expected. The Smith machine, because of its superior hatching method, helps you get that extra percentage of hatch which makes a profit and pleases your customers.

Tighten Up

On Replacements

THE hatchery industry has developed a reputation for extreme liberality on replacements. If your chicks are at fault you should replace them, but don't forget that every replacement you make is a loss to you. The margin of profit is so small that several chicks must be sold at full price to equal the loss occasioned by replacing even one chick free of charge. The Smith Incubator helps reduce these replacements. A Smith-Hatched chick is stronger and better. It is properly incubated. It comes out of the incubator—its vitality unimpaired. It is protected against chilling at hatching time. It lives and grows naturally and as a result you are free from the expense of replacement which inferior hatching equipment causes.

Tighten Up with a Smith!

DISEASE SPREA
IN INCUBATO

UNPR
EQU

DEFENDANT S' EXHIBIT No. 57
1424

What does it profit you

PAID

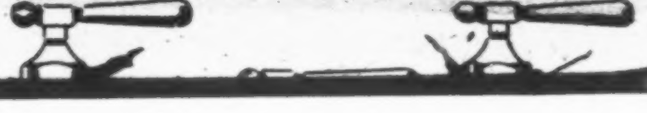
if you

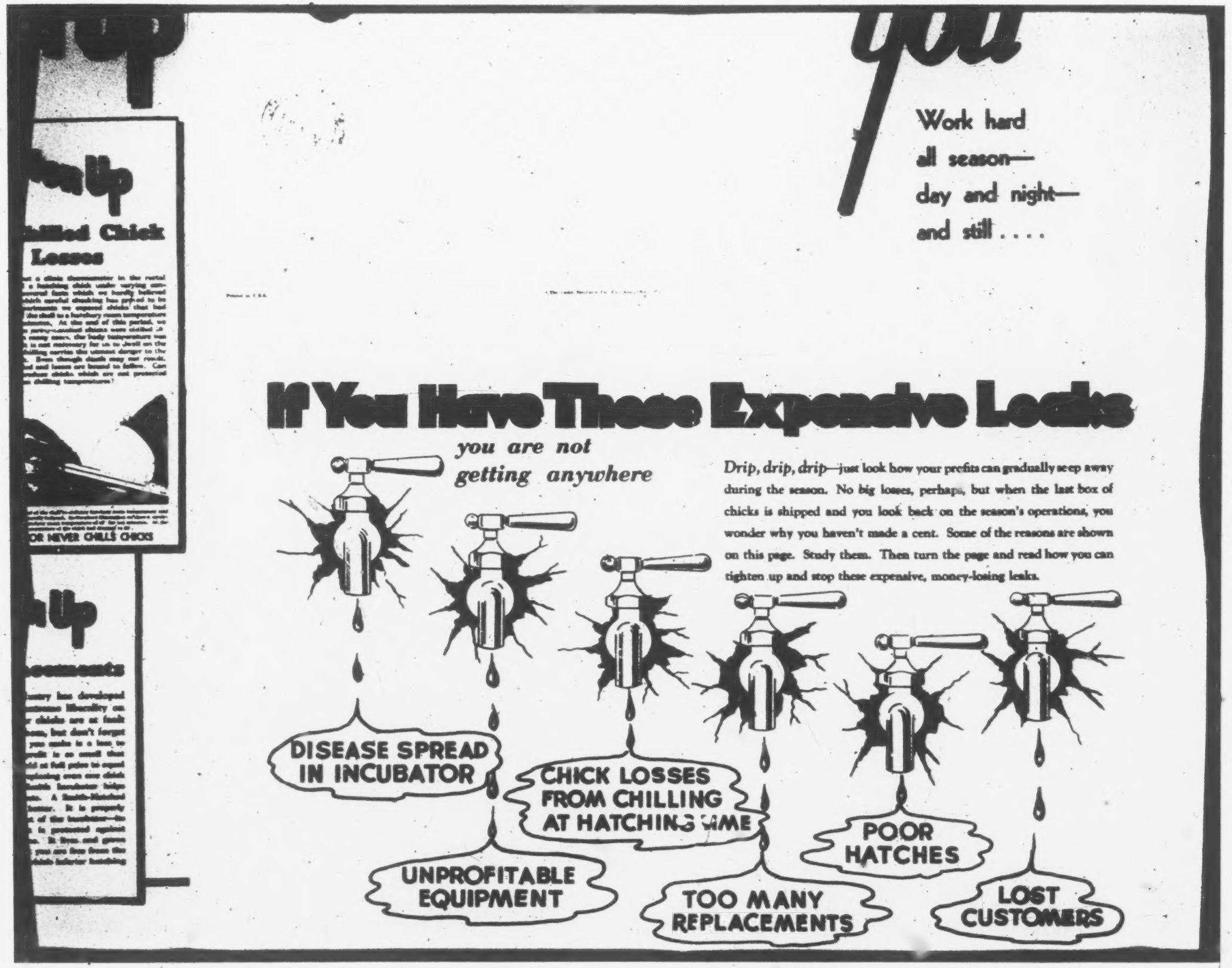
Work hard
all season—
day and night—
and still . . . .

If You Have These Expensive Leaks

you are not getting anywhere

Drip, drip, drip—just look how your profits can gradually seep away during the season. No big losses, perhaps, but when the last box of chicks is shipped and you look back on the season's operations, you wonder why you haven't made a cent. Some of the reasons are shown on this page. Study them. Then turn the page and read how you can tighten up and stop these expensive, money-losing leaks.

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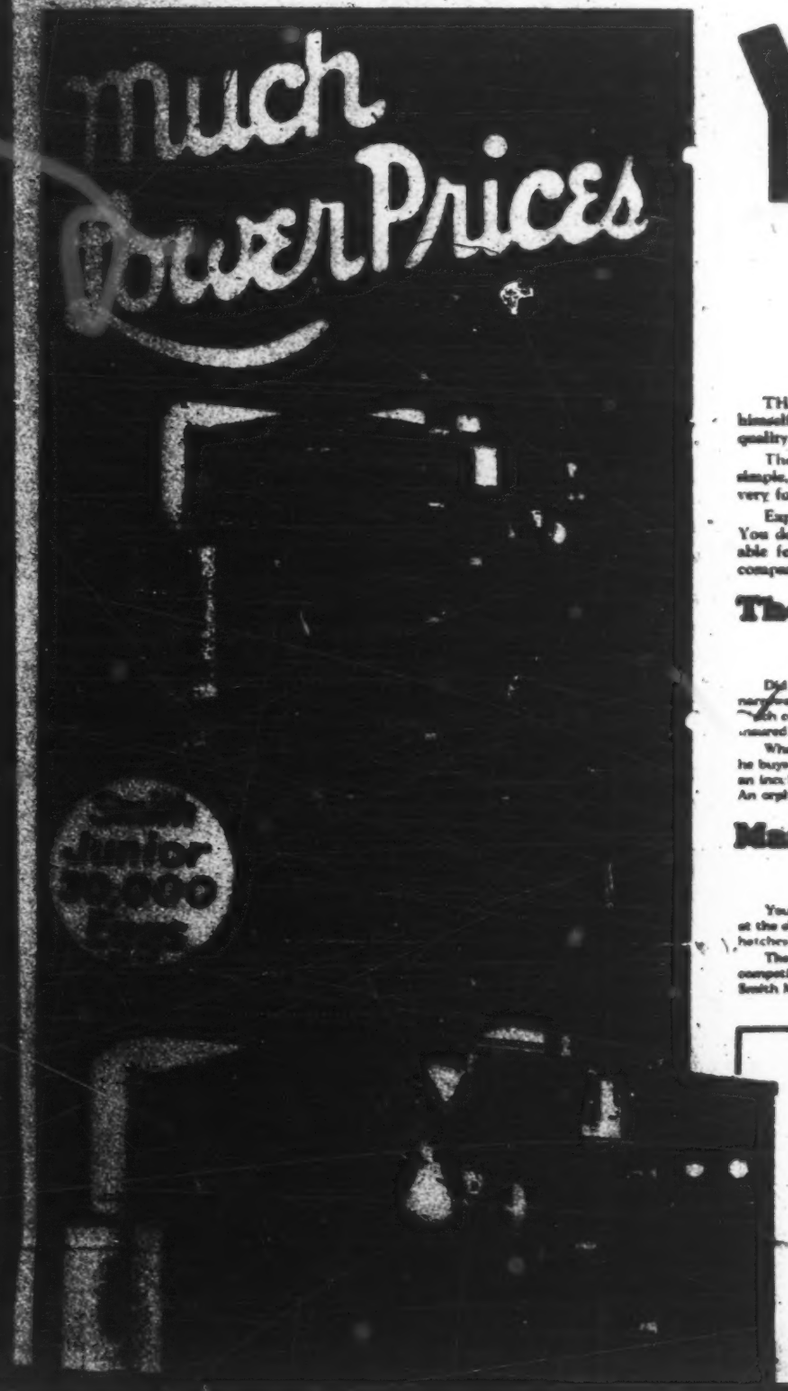
DISEASE SPREAD IN INCUBATOR
UNPROFITABLE EQUIPMENT
CHICK LOSSES FROM CHILLING AT HATCHING TIME
TOO MANY REPLACEMENTS
POOR HATCHES
LOST CUSTOMERS



Your Profit-Maker Is

Down Goes the Cost of Producing C
When a Smith Incubator is Usec

THE DAY of easy money for the hatcheryman is gone. Today he must, first of all, equip himself with an incubator that will give him the highest hatching percentages and the best quality of chicks for the least amount of time, money and labor expended.

The race for existence among hatcherymen is on in dead earnest. It is a case, pure and simple, of the survival of the fittest. Survival cannot be insured unless you strengthen the very foundation of your business by equipping your plant with modern incubators.

Experience over a period of years has shown the Smith Machine to be the best producer. You do not need to take our word for this—ask a Smith user. Thousands of them are available for reference; many of them have tried the Smith alongside other equipment and by comparison have learned that no machine can equal the Smith as a profit-maker.

The Foundation of Your Business Success is the Incubator You Use

Did you ever wonder why the hundreds of automobile manufacturers which formerly existed have now narrowed down to a few companies? The answer is easy—people want cars backed by a big, strong company with continuous in business year after year, even after the car is worn out. They want to buy where they are assured of service and where they can get parts and replacements.

What chance has a hatcheryman to profit as he should from his incubator investment, if the machine he buys is liable to become an orphan? The time has come in the hatchery business to consider, in buying an incubator, whether or not the company which makes it will be in business as long as the machine lasts. An orphan incubator, like an orphan automobile, has no friends and will bring you a loss.

Many Hatcherymen Have Been Ruined by Poor Equipment

You have seen many hardworking hatcherymen labor day and night through the season, and come out at the end of the year with no money to show for their efforts. Their profits have dripped away through poor hatches, heavy replacements and excessive operating costs which brought the overhead above the profit line.

The answer to many a hatcheryman's financial trouble lies in up-to-date Smith Machines. You are competing with Smith equipment, and the only way to successfully meet such competition is to install a Smith Machine—there is a capacity to fit your needs.

Prices Tumble

In addition to the production of the last word in efficient incubation, Smith prices have been drastically reduced in conformity with the trend toward lower costs. Never before in the history of the trade has it been possible to buy the quality, the efficiency, the skilled engineering developments or the different egg capacities now possible to obtain in a Smith Incubator. The prices on Smith machines include prepaid freight and free installation. You owe it to yourself—your future success in the hatchery business—to thoroughly investigate the new Smith machines.

This is No Time t
Unprofitable E

Never in the history of America has so much
methods and means for getting production costs d

The hatching business is no exception to the r
ness realizes that this is no time to try to make
to stay in business if you get poor hatches and
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big advantage in these times.

Smith machines are designed to meet today's
healthy, hardy chicks at the lowest cost per chick

Four sizes—fit your requirements as to c

Smith Junior, 30,000
New Smith Intermedi
Smith Old Reliable, 5
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The Smith Incubator Has

All sorts of rumors have been floating around the
separate hatcher.

Exhaustive tests have conclusively shown that a separ
and eggs must be handled more frequently. Separate
to damaging temperature and humidity changes. We
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Liberal

In a spirit of helpfulness t
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Liberal T...

In a spirit of helpfulness to th... we extend extremely liberal ... Smith Incubators. The first ... you are allowed three years in ... ance. What other equipment ... liberal terms?

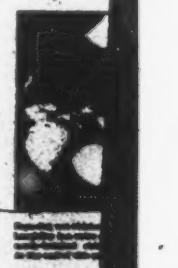
Trade In Old ...

In addition to drastically reduced ... you may trade in your present hatc... a worth-while allowance. Smith ha... enable every hatcheryman to equi... that will put him in the running in ... and keep him there.

Talk Over Your Problems With a Smith Representative

Feel free to talk over your hatchery problems with a Smith man. You will not be placed under obligation in any way, and you are sure to learn much of interest and value to yourself. Every Smith man is a thoroughly experienced man in the hatchery field. What he suggests or advises may be followed with confidence. He is keeping in constant touch with hatchery developments, and his advice is in every case based on practical knowledge and not on theory. Our men have just returned to their territories after a week's conference in Cleveland, and much of interest to the hatcheryman was discussed by our men from all sections of the United States. This extensive knowledge of conditions throughout the industry together with the best methods to improve these conditions, is therefore free for the asking to every hatcheryman who discusses his problems freely with a Smith man. Just mail the card—no obligation—and a Smith man will call to see you at your convenience.

Just Mail this Card



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[illegible] Is Here!

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[illegible] from his incubator investment, if the machine [illegible] come in the hatchery business to consider, in buying [illegible] it will be in business as long as the machine lasts. [illegible] no friends and will bring you a loss.

[illegible] Have Been Ruined [illegible] Equipment

[illegible] day and night through the season, and come out [illegible] efforts. Their profits have dripped away through poor [illegible] which brought the overhead above the profit line. [illegible] lies in up-to-date Smith Machines. You are [illegible] successfully meet such competition is to install a

This is No Time to Try to Make Unprofitable Equipment Do

Never in the history of America has so much thought and consideration been given to methods and means for getting production costs down to bed rock.

The hatching business is no exception to the rule. Every man in the chick producing business realizes that this is no time to try to make unprofitable equipment do. You cannot hope to stay in business if you get poor hatches and inferior chicks while your competitor is rolling out big hatches of salable chicks that live and grow. The man with Smith equipment has a big advantage in these times.

Smith machines are designed to meet today's demands for more profitable production of healthy, hardy chicks at the lowest cost per chick.

Four sizes—fit your requirements as to capacity and housing space available.

Smith Junior, 30,000 eggs
New Smith Intermediate, 39,000 eggs
Smith Old Reliable, 52,000 eggs
New Smith Giant, 65,000 eggs

The Smith Incubator Has No Separate Hatcher

All sorts of rumors have been floating around the hatchery industry concerning our attitude toward a separate hatcher.

Exhaustive tests have conclusively shown that a separate hatcher adds to the labor cost because the chicks and eggs must be handled more frequently. Separate hatchers add to the chances for exposing the chicks to damaging temperature and humidity changes. We have not found any separate hatcher which will add to the quality of chick produced—nor will it produce any greater per cent of hatch. They are not more sanitary than most modern incubators, nor will they prevent disease spread.

We believe a Smith machine produces a better chick than can be produced with any other type of equipment, and produces it at a lower cost per chick. Therefore our answer to the separate hatcher question is NO.

[illegible] Tumble

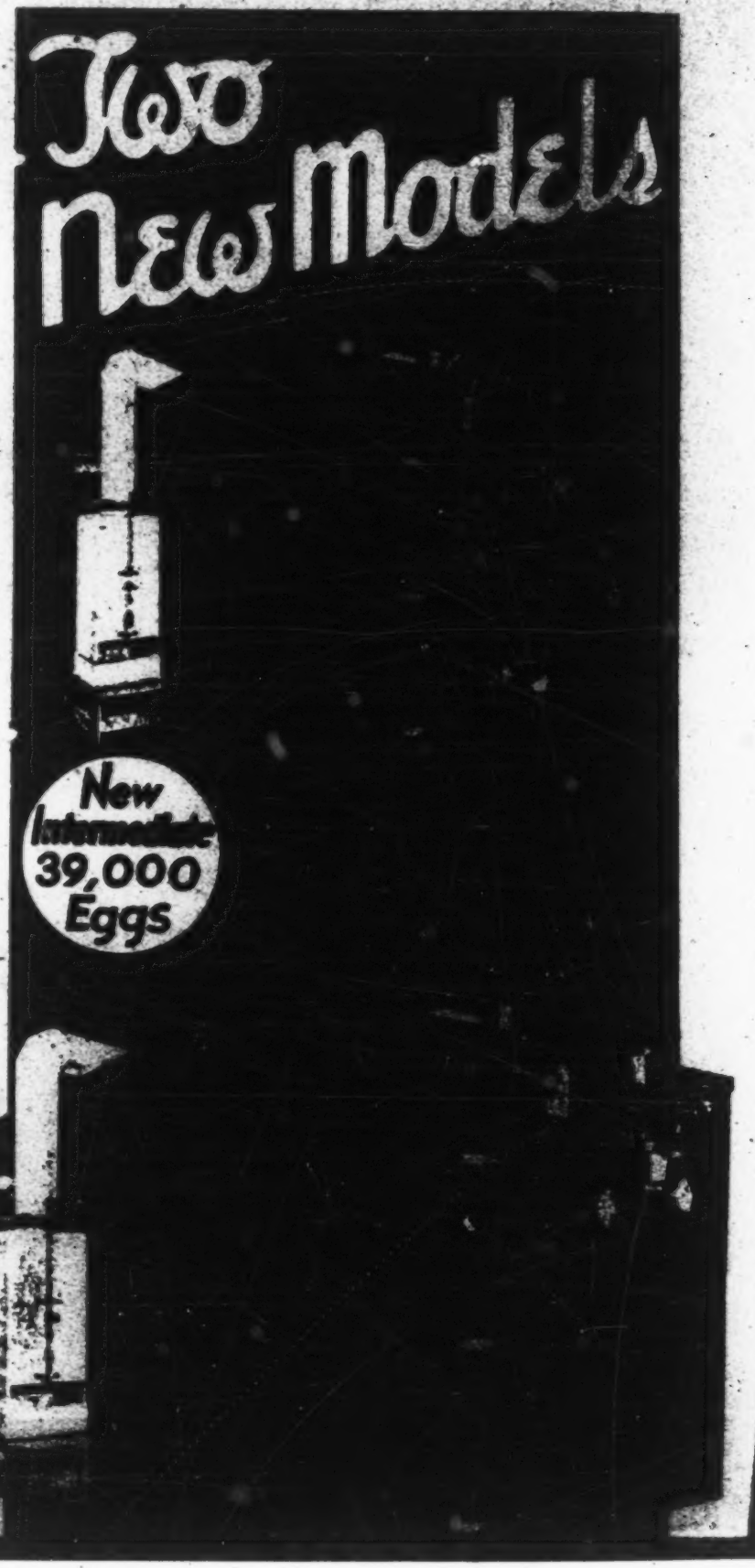
[illegible] of the last word in [illegible] prices have been drastical- [illegible] the trend toward lower [illegible] of the trade has it [illegible], the efficiency, the [illegible] in a Smith Incubator. [illegible] include prepaid freight [illegible] it to yourself—your [illegible] business—to thoroughly [illegible]

Liberal Terms

In a spirit of helpfulness to the hatchery profession, we extend extremely liberal terms of payment for Smith Incubators. The first payment is small, and you are allowed three years in which to pay the balance. What other equipment can you buy on such liberal terms?

Trade In Old Equipment

In addition to drastically reduced prices and liberal terms, you may trade in your present hatching equipment and receive a worth-while allowance. Smith leaves no stone unturned to enable every hatcheryman to equip himself with Incubators that will put him in the running in a highly competitive field, and keep him there.


Two New Models
New Intermediate 39,000 Eggs

When a Smith Incubator is Used

...cheryman is gone. Today he must, first of all, equip ... him the highest hatching percentages and the best ... time, money and labor expended.

...ryman is on in dead earnest. It is a case, pure and ...rvival cannot be insured unless you strengthen the ...pping your plant with modern incubators.

... shown the Smith Machine to be the best producer. ...—ask a Smith user. Thousands of them are avail... tried the Smith alongside other equipment and by ... can equal the Smith as a profit-maker.

...f Your Business Success ...bator You Use

...automobile manufacturers which formerly existed have now ... is easy—people want cars backed by a big, strong company ... after the car is worn out. They want to buy where they are ... and replacements.

...as he should from his incubator investment, if the machine ... has come in the hatchery business to consider, in buying ...-makes it will be in business as long as the machine lasts. ...ile, has no friends and will bring you a loss.

...en Have Been Ruined ... Equipment

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...s Tumble

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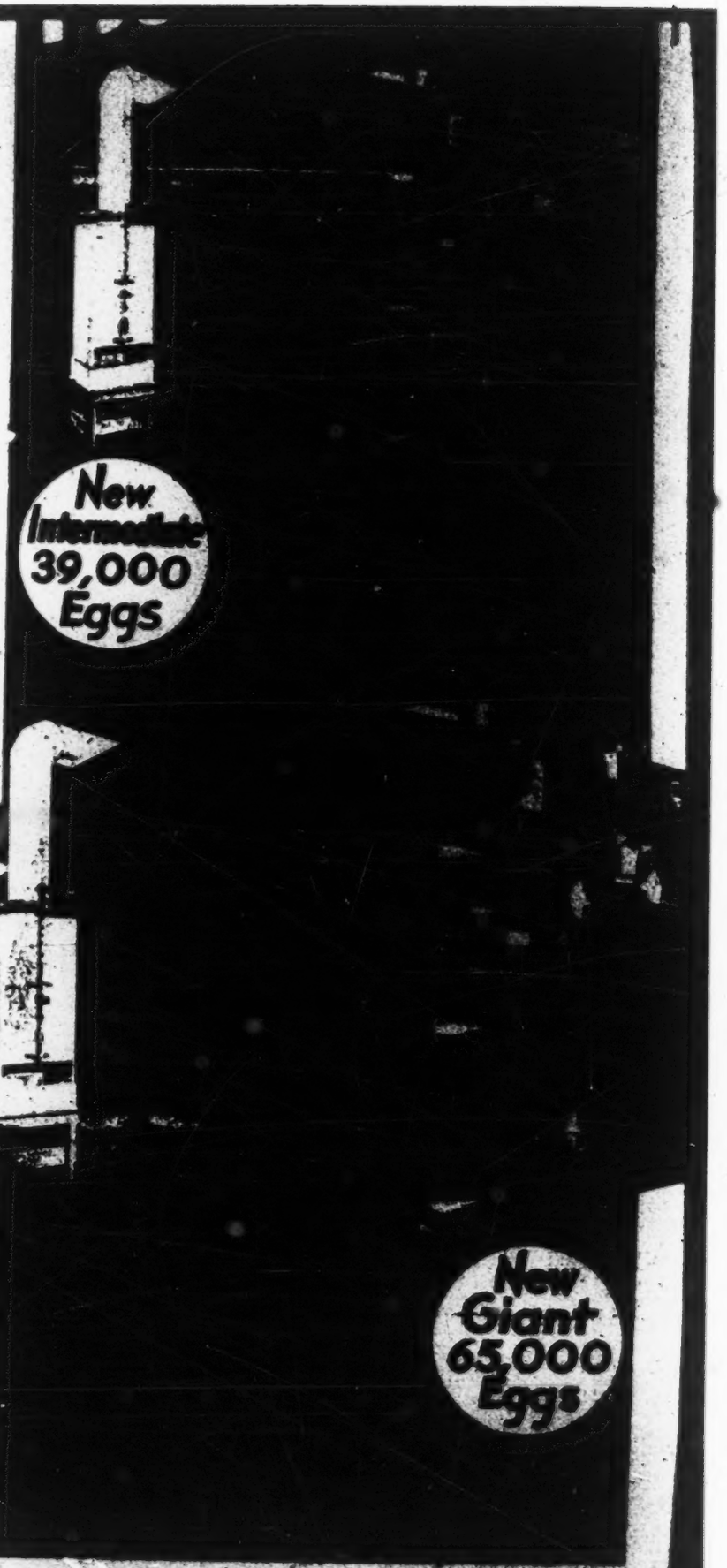
...Your Problems ...h Representative

...problems with a Smith man. You will not be placed ... sure to learn much of interest and value to yourself. ...ced man in the hatchery field. What he suggests ...es. He is keeping in constant touch with hatchery ...ase based on practical knowledge and not on theory. ...ticales after a week's conference in Cleveland, and ... discussed by our men from all sections of the United ...tions throughout the industry together with the best ...therefore free for the asking to every hatcheryman ... Smith man. Just mail the card—no obligation—and ...convenience.

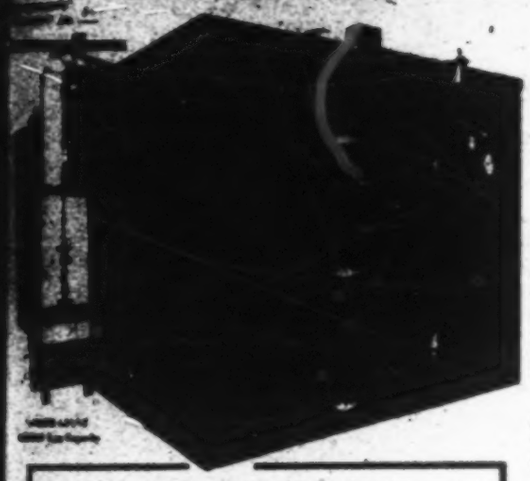
Just Mail this Card

THIS NEVER HAPPENS IN A SMITH INCUBATOR



...H INCUBATOR CO. . . . Cleveland, Ohio

Smith Hatches Best Because Eggs are NEVER Disturbed During Critical Period 18th Day to Pipping Time



Another Scientific Reason Why Smith Research Has Continually Advised Against Separate Hatchers and all other methods where retraying on the 18th day is necessary

You cannot dodge facts. You cannot rely on theory. You cannot follow unproven methods safely. These emphatic statements should be of more than passing interest to hatcherymen who are all without a single exception in the very midst of changing conditions which have no parallel in the entire history of the industry.

The facts about better hatching—even if they do appear old ideas—are given to the industry by Smith Research only after the most careful and painstaking scientific study. Nothing is ever taken for granted. A contribution is never accepted hastily. That is why we maintain our Research Department and study hatchery problems year after year.

On warm days, you enjoy a breeze as long as that breeze is cool, but strong or hot you cool.

In the Smith, the eggs are comfortable—the temperature and the air movements are designed to keep them comfortable.

This is particularly important on the 18th and 19th days of incubation when the greatest death loss in the shell occurs. If this critical period, the eggs are true to three degrees warmer than the incubator temperature and naturally are cooled by the air which moves around them. They are susceptible to temperature changes that air gaps or holes in the egg formations in the trays have a definite bearing on the hatchability of otherwise good eggs.

Doesn't this careful, scientific research prove to you that any method of hatching which involves the moving or disturbance of eggs during the critical period means a decrease in hatching percentages? We think you will agree that it does.

We have stated repeatedly, and say so again, that we do not consider a Smith Incubator merely as so much wood, metal and wiring. We look at it rather as a modern, scientific achievement for the production of the greatest number of saleable chicks at the lowest cost. Such an achievement could not possibly be represented in terms of materials. It must and is represented by the feathers we have made the facts we have discussed which are gladly and freely passed along for the betterment of the hatchery industry.

Doesn't Your Better Business Judgment Suggest the Advantages of a Smith Incubator and the Advisability of Having the Smith Organization Constantly Helping You With Your Problems?

The Smith Incubator from the smallest to largest represents equipment which a hatcherymen may have installed by factory experts to place him in a position whereby he may take full advantage of the suggestions and service of the Smith Organization. However, the discoveries made by the Smith Research Department are offered freely to the whole hatchery industry. In these days of competition still led by the hatcherymen based on the intelligent hatcherymen. He must get up-to-date in his methods and equipment or pass out of the picture. We offer our services to all who are progressive, anxious to learn and get ahead.

Let Smith Protect You on Possible Price Increases

There is a possibility every lifting costs ... prices today. The rise is being felt in many branch of industry, and hatcheries are no exception to the rule. No price would be appreciated. Whatever our hatcherymen may be ... equipments, and should ready and willing to protect you on possible price increases. If you get in touch with us at once.

We will help your cause money as well as quicker money.

Liberal Terms

Real, of reasonable ready cash proof and should between you and a Smith Incubator. You may buy on the basis of extremely liberal ... The first payment is small, and you are allowed ... years to pay the balance. In addition we will make a worth ... allowance for your old equipment. Smith leaves no stone ... between a hatcherymen to enjoy the benefits and advantages ... Smith Incubator. We will ... how you to plan your way to ... the profits of hatching.

There is a Smith Model to Suit Every Need

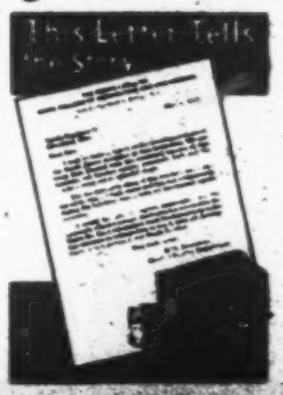
Having an incubator besides the careful consideration of location, need of operation and the company behind the machine you buy. The Smith takes first place upon just this capacity. There any other machine on the market. Operators of Smith Incubators have favorably many expressions of satisfaction greater than by the low cost of essential non-complicated labor required.

Smith Pays the Freight and Installs

Smith Incubators, too, are being widely established because of its quick response to any need of thousands. Smith pays the freight, and all hatcheries are made by factory men. As different dealers, other incubator manufacturers does this.

There isn't a single, solitary reason why you shouldn't have a Smith. There is a capacity to suit every requirement.

Smith Junior	10,000 Eggs
Smith Intermediate	20,000 Eggs
Smith Old Reliable	30,000 Eggs
Smith Giant	60,000 Eggs



Today the opportune thought in the mind of every thinking hatcherymen is to know labor and business advantages of hatch. Every item of information leading to the production of more quality chicks at an increase in workmanship, plus the most economical care and management in the handling industry.

The announcement, therefore, comes of a very important item. It not only serves to improve the industry with the most vital and useful research that is being continually conducted by The Smith Incubator Company, but also gives to you that this company does not hesitate to continue their forward position when such a course will open the way for more profit for the hatcherymen who own Smith machines.

• • • •

Every hatcherymen who operates Smith Incubators owes duty to enthusiastically endorse Smith service. It is admitted that a Smith Incubator is only a means to an end. Its main asset pride for the man or woman who employs business of hatching chicks. This chick business is highly specialized full of problems—subject to constant study, good experimentation.

So our readers these facts more keenly than The Smith Incubator Company, and this publication is home and more ... in the whole hatching industry when our Research Department says "Watch Us on the Hatchmark Page."

Free Insurance

All purchasers of hatchery equipment ... Smith users or users, small and large hatcheries of all either number sold by us this year, will hereafter receive insurance free of charge for the first year. This policy of The Smith Incubator Co. will represent a saving of many dollars to hatcherymen buying equipment from Smith this year.

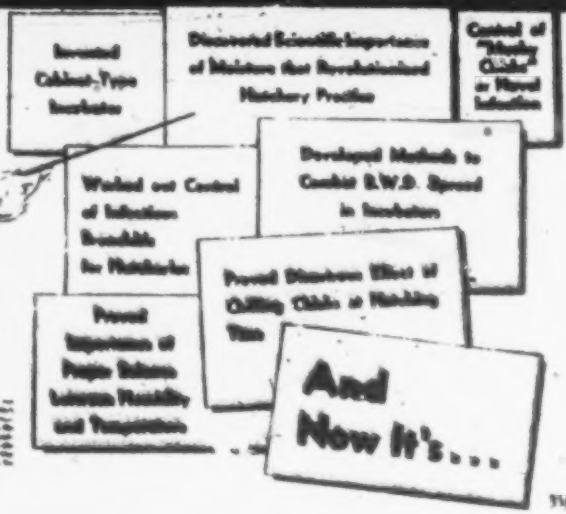
After the first year the insured portion of the machine will be insured free by this company, and if the hatcherymen desires, his paid-up equity may also be insured through The Smith Incubator Co. at a much reduced rate. In fact, it is about half the regular rate.

Owners of incubators, whether new or used, bought previous to this time, will be given the advantage of this same insurance saving as soon as their present insurance expires.

Just Mail this Card

NO MORE 18th Day TEST

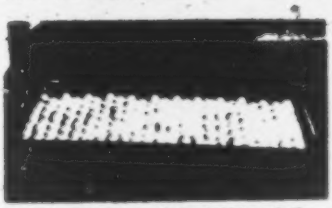
Once Again Smith Research Takes a Step Forward in the Science of Incubation

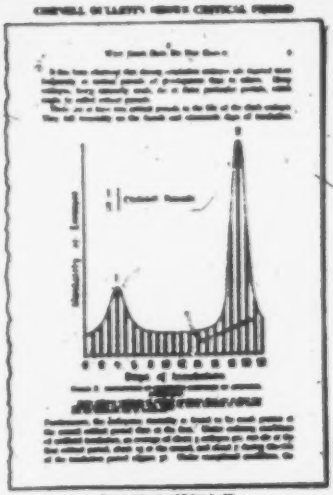


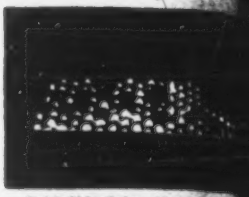
1427

HANDS OFF ON THE EIGHTEENT

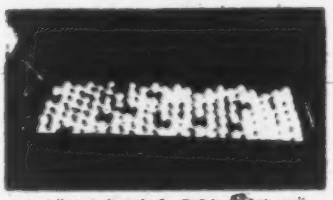
Read Why the 18-Day Test Tends Reduce the Percentage of Hat

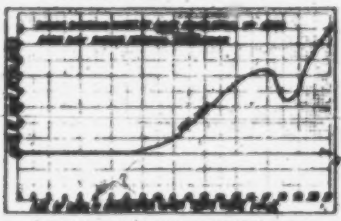






Uniformity of Air Circulation Important





Leave Infertile Eggs in Trays Until Hatch is Over

You Get a Better Percentage of Hatch—Proved by Years of Research

[fol. 1429] DEFENDANTS' EXHIBIT No. 39

(Letterhead of)

The Smith Incubator Company, 3108 West 121st Street, Cleveland, Ohio

October, 1930.

DEAR HATCHERYMAN:

The accompanying new catalog describes the Smith incubator. It is sent so that you may become familiar with the important improvements in this year's models—both steam and electric. These improvements are listed on Page 23.

R That it is only in Smith incubators that you can positively control the proper balance of temperature and moisture, so necessary to
E the production of big, strong, livable chicks.
That fumigation to check the spread of
M B.W.D. during the hatching period is now recommended by many government authori-
E ties. It is a simple matter to fumigate Smith incubators in an efficient, practical and easy
M manner.
That the purchase price includes prepaid
B Freight charges and the free erection of Smith machines in your hatchery.
E That Smith Service is the greatest and finest co-operation in the hatchery industry.
R This service is freely given without charge. It will aid in making your hatchery business profitable and successful.

Read the story of Smith installations that starts on Page 10. This chapter, showing the purchases of Smiths year [fol. 1430] after year by the foremost commercial hatcherymen, pictures better than words can tell the well-known fact that Smith operators are successful and make money.

If you are planning on increasing your incubator capacity or replacing old or unsatisfactory equipment, give us the

opportunity of further explaining Smith incubators to yo
We shall be glad to do this without any obligation. On
of our representatives is near you.

Very truly yours, The Smith Incubator Company
(Signed) C. R. Jenney.

CRJ:LFC.

(Here follows one photo, side folio 1431)

The Science of Incubation Makes Giant Strides

Incubation has just recently found its "seven-league boots." For thousands of years eggs were hatched in the same old way in incubators utilizing time-worn methods. Only a few minor changes occurred up until the twentieth century. The changes in incubation methods in the past fifteen years have not only revolutionized poultry production but have been notable for the scientific facts that have been brought to light.

Since 1922 The Smith Incubator Company have led the field in the production of the highest type of incubator equipment. Since that time they have also constantly carried on research in incubation methods under the direction of experts. To Mr. Joseph I. Taggart and Mr. T. S. Townsley goes the credit for as original and important scientific research work as has been made in any industry.

Unsatisfied with outworn ideas, these two men have shattered precedents and gotten down to "brass tacks" on incubation. Nothing was taken for granted. Each step was checked carefully in the laboratory and in collaboration with experts from educational and other fields. The ideas then developed were tested in the final crucible—actual hatchery operation.

Humidity

Their first discovery was the relation of moisture content of the air in the incubator to the percentage of chicks hatched and their health. The exact degrees of temperature were determined for best results. Scientific instruments for the determination of humidity were made a standard part of Smith equipment, and a definite method of moisture control installed. This work, naturally, led to the next step . . .

THE CORRELATION OF Humidity and Temperature

Here it was found that heat must be accurately and scientifically kept in balance with humidity, in order to bring eggs out on time and to hatch every hatchable egg. Better hatches of higher quality chicks resulted when there was a proper balance between humidity and heat—another milestone reached—and balanced control of these two factors of successful incubation was made a feature of all Smith incubators.

Bulletins and special instruction sheets were furnished to hatcherymen to enable them to carry on satisfactory incubation. The results have been—bigger hatches, better quality, more profits for the hatchery industry.

Fumigation

The disease of bacillary white diarrhea offered an ever-increasing problem in hatchery operations. In several quarters, half-hearted efforts were made to obviate this menace. It was proved by the United States Department of Agriculture and state universities that bacillary white diarrhea was spread in all types of incubators—it played no favorites.

Quickly and sensibly The Smith Incubator Company set to work, with the result that fumigation was made a standard practice in Smith machines. Due to the Smith system of positive ventilation, fumigation with formaldehyde gas, while the hatch was coming off, was recommended. After this had been proved in different sections of the country, it was tested and tried under rigid supervision by leading state universities. Their whole-hearted endorsement of this method of disease prevention is a testimonial to the scientific work done by the Smith organization.

—and Now

After years of work along incubation lines, the newest findings of the research department are shaking fixed ideas and blazing new trails in the science of incubation.

Here is written a new page in the history of your industry. Simple facts that have been dug out and presented to the hatchery industry to help them do a more profitable business year in and year out. Read about them on the next page.

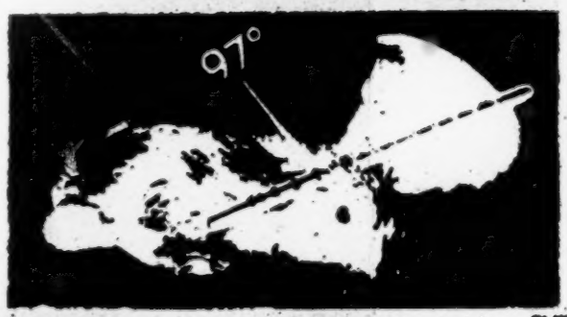
MR. TOWNSLEY

The First Ten Days—

The first ten days that an egg is in an incubator the temperature of the embryo is practically the same as the incubator temperature. As incubation advances, the embryo takes on a temperature of its own, and, by the twentieth day it may be two to three degrees warmer than the incubator.

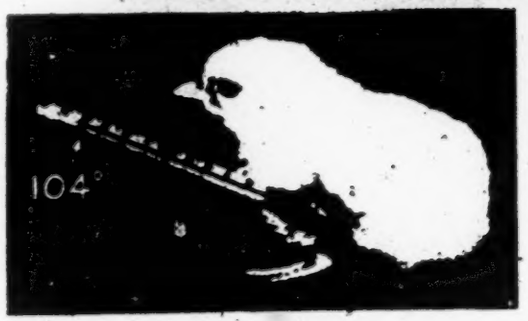
After the Chick Pips—

After the chick pips, its temperature is largely influenced by the humidity of the air which it breathes. If eggs in this condition are exposed to ordinary hatchery room air, the chicks' temperature drops as shown at the left.



Danger!

Many chicks are seriously damaged by exposing them to dry atmosphere the first few hours that they are out of the shell. The wet down acts like a wet bulb thermometer, and the body temperature of the chick will drop several degrees under ordinary hatchery room conditions.



A Normal Chick Just Dried Off

Chilling

Chilling of the chicks between the time they pip the shell and the time they have thoroughly dried is a serious matter and frequently causes poor development and sometimes heavy mortality in the weeks that follow. This is what happens when trays of hatching chicks are pulled out into the hatchery room for inspection.

When you work inside the Smith, the chicks are inspected from time to time without chilling because you do not subject them to the dry air of the hatchery room. No hatcheryman can afford to chill his chicks several degrees during this period.

[fols. 1432 & 1433] DEFENDANTS' EXHIBIT No. 43

This contract executed in duplicate.

Settlement Agreement Between Samuel B. Smith and the Buckeye Incubator Manufacturing Company

This Agreement, made and entered into this second day of March, 1933, between Samuel B. Smith, of Cleveland, Ohio (hereinafter called "Smith"), party of the first part, and The Buckeye Incubator Manufacturing Company, an Ohio corporation (hereinafter called "Buckeye"), party of the second part,

Witnesseth:

Samuel B. Smith and The Buckeye Incubator Company, an Ohio corporation, entered into a written agreement, dated April 29, 1927, whereby Smith granted to said The Buckeye Incubator Company the right to manufacture and sell incubators and incubating units of the capacity specified in said agreement under United States Patents Nos. 1262860, 1263138 and 1543130, and Canadian Patents Nos. 217777 and 217778, which patents were each and all owned and are still owned by Smith; and which said agreement has been assigned and is now owned by The Buckeye Incubator Manufacturing Company, party of the second part hereto. A controversy has arisen between said Smith and Buckeye relating to the manufacture by Buckeye of a separate hatcher, which, when it is used in conjunction or combination with an incubator or incubating unit covered by the [fol. 1434] Smith patents, Smith claims is a violation of the contract and license of April 29, 1927.

The parties are desirous of settling said controversy and all other claims now existing by each against the other, and for the purpose of settling said controversy have agreed and do hereby mutually agree as follows:

1. Said Smith agrees that the separate hatcher, as a distinct unit, as defined in the next succeeding paragraph herein, heretofore and now being manufactured by Buckeye and sold to the trade by The Buckeye Incubator Company, a Delaware corporation, the sales company for Buckeye, is not covered by any of the terms or specifications of any patents heretofore granted to said Smith by the United States Government and the Dominion of Canada, and especially United States Patents Nos. 1262860, 1263138 and

1543130, and Canadian Patents Nos. 217777 and 217778, and that the separate hatcher as a distinct unit, as defined herein, does not infringe any of the claims of said patents, and this paragraph applies to said separate hatcher, whether used with an incubator or incubating unit manufactured under any of the fo· ·ing patents, or used indepently of any such incubato. . incubating unit.

The term "separate hatcher" is hereby agreed to mean a cabinet capable of maintaining a proper temperature and moisture condition wherein the eggs are all in one stage of incubation and to which the eggs from an incubator or incubating unit are transferred when it is no longer necessary to turn them.

It is understood and agreed that in the event any person, [fol. 1435] firm or corporation other than Buckeye and/or The Buckeye Incubator Company makes, uses or sells a separate hatcher which said Smith feels could be used in conjunction or combination with an incubator or incubating unit and which said Smith feels infringes said United States Patents Nos. 1262860, 1263138 and 1543130, and said Canadian Patents Nos. 217777 and 217778, said Smith shall have the right to and shall prosecute all such infringers, shall pay all the expenses of such prosecution, and shall receive all recoveries therefrom, in which prosecution Buckeye shall render all necessary assistance at the expense of said Smith.

2. Buckeye has heretofore failed to pay royalties upon incubators and/or incubating units manufactured by it which Smith claims are covered by patents owned by him hereinbefore described. Buckeye hereby agrees to pay to Smith the sum of Forty-five Thousand Forty-one Dollars and Fifty-seven Cents ($45,041.57), in full payment of all royalties accrued on said incubators and/or incubating units so shipped by it up to and including December 31, 1932, said payments to be made to said Smith by Buckeye on the following dates and in the following amounts, the same to be evidenced by separate promissory notes executed by Buckeye as of January 1, 1933, bearing interest at the rate of six (6) per cent. per annum from said date:

March 20, 1933	$1250.00
April 20, 1933	2000.00
May 20, 1933	2000.00
June 20, 1933	2000.00

[fol. 1436] July 20, 1933	2000.00
August 20, 1933	1250.00
September 20, 1933	1250.00
October 20, 1933	1250.00
November 20, 1933	1250.00
December 20, 1933	1250.00
January 20, 1934	1250.00
February 20, 1934	1250.00
March 20, 1934	1250.00
April 20, 1934	2000.00
May 20, 1934	2000.00
June 20, 1934	2000.00
July 20, 1934	2000.00
August 20, 1934	1250.00
September 20, 1934	1250.00
October 20, 1934	1250.00
November 20, 1934	1250.00
December 20, 1934	1250.00
January 20, 1935	1250.00
February 20, 1935	1250.00
March 20, 1935	1250.00
April 20, 1935	2000.00
May 20, 1935	2000.00
June 20, 1935	2000.00
July 20, 1935	1791.57

In the event Buckeye shall at any time fail to pay the sums aforesaid as set forth herein on their due dates, this contract and the contract of April 29, 1927, shall be terminated at the election of said Smith in the manner set forth in paragraph 1, section 6 (entitled "Default") of the contract of April 29, 1927.

The scale of royalties for all incubators and/or incubating units manufactured under said Smith patents here- [fol. 1437] inbefore referred to, and the capacities of all such incubators and/or incubating units sold and shipped from January 1, 1933, shall be the same as now in force and as set forth in said contract of April 29, 1927, and the provisions pertaining to the payment of said royalties shall be the same as therein set forth, it being expressly understood and agreed between the parties that the payment of said Forty-five Thousand Forty-one Dollars and Fifty-seven Cents ($45,041.57) is for accrued royalties on incubators and/or incubating units sold and shipped by

Buckeye up to and including December 31, 1932. In the case of any such incubators and/or incubating units which have been sold prior to January 1, 1933, but are not shipped until or after January 1, 1933, the scale of royalties as set forth in the contract of April 29, 1927, shall apply and be paid.

3. This agreement having been entered into for the purpose of mutually settling any pending controversies between the parties hereto, Smith hereby releases Buckeye and The Buckeye Incubator Company, and Buckeye hereby releases Smith, The Smith Incubator Company and The Smith Incubator Manufacturing Company from all claims for damages, actions, causes of action of whatsoever kind and nature, and particularly for violation of all prior or existing contracts or infringements, excepting only said payment by Buckeye of accrued royalties as hereinbefore set forth, in the sum of Forty-five Thousand Forty-one Dollars and Fifty-seven Cents ($45,041.57), on the dates set forth in paragraph 2 hereof, and Smith and Buckeye further release any and all claims against any customers of [fol. 1438] the other, except claims which Smith may have based on unauthorized structural changes made by any customer.

It is intended hereby, and Buckeye does release said Smith, The Smith Incubator Company and The Smith Incubator Manufacturing Company from all claims for damages, actions or causes of action of every kind and description arising from or out of the sale, resale or acceptance in trade of Buckeye incubators and/or incubating units by said Smith, The Smith Incubator Company and The Smith Incubator Manufacturing Company.

It is hereby further mutually agreed between the parties hereto that Buckeye and/or The Buckeye Incubator Company may accept in trade and resell Smith incubators, and Smith, The Smith Incubator Company and/or The Smith Incubator Manufacturing Company may accept in trade and resell Buckeye incubators from this date, both parties agreeing that this right will exist to each and all of the parties named in this paragraph from this date until the expiration of the Smith patents previously referred to herein.

4. Smith and Buckeye agree that they will cause the suit now pending in the United States District Court for the

Northern District of Ohio, Eastern Division, No. 4022 In Equity, to be marked "Settled and Dismissed without cost," it being expressly agreed herein that each party will pay its own costs and expenses incurred by said suit.

5. This agreement herewith incorporates the provisions set forth in the contract and license of April 29, 1927, the [fol. 1439] same as if said provisions were fully rewritten herein, and in no way alters or changes any of the provisions or conditions of that contract, except as specifically provided herein.

6. This agreement shall inure to the benefit of and be binding upon the heirs, administrators, executors, trustees, successors and assigns of the parties hereto, even where the same have not been herein specifically named.

In Witness Whereof, the parties hereto have hereunto affixed their signatures at Cleveland, Ohio, the day and year first above written, the execution of this contract on behalf of The Buckeye Incubator Manufacturing Company having been first duly authorized by its Board of Directors.

The Buckeye Incubator Manufacturing Company,
by (Signed) A. R. Hill, V. Pres. and Treas.
(Signed) Samuel B. Smith.

Witnesses: (Signed) A. L. Sandberg. (Signed) Thomas F. Patton.

[fol. 1440] Fullington Patent No. 1,205,445 is incorporated herein with patents comprising Defendants' Exhibit No. 10, found at page 1287 of this volume.

1146

Aug. 4, 1925. 1,548,478

J. L. NIX

EGG TRAY

Filed Jan. 28, 1924

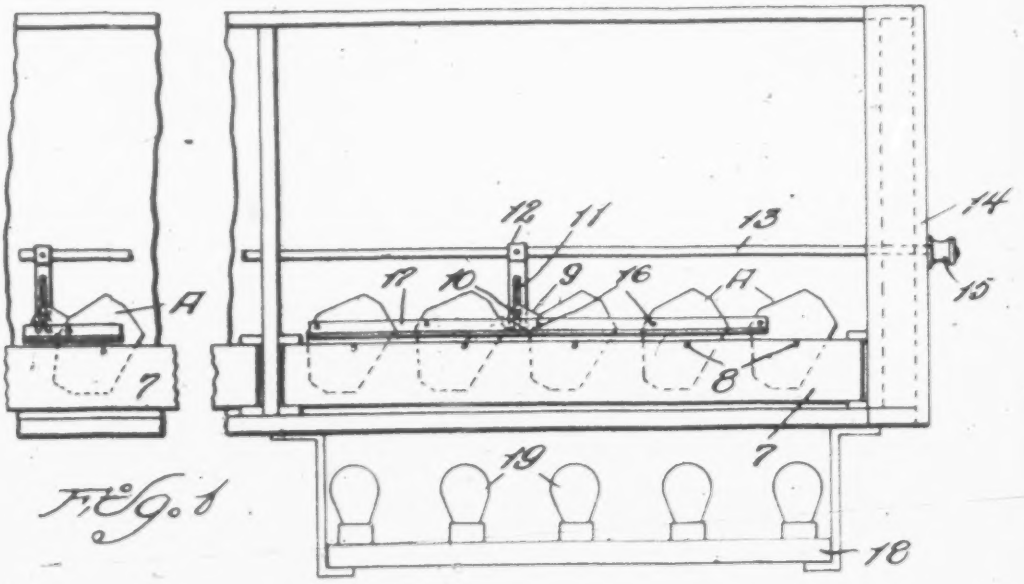


Fig. 1

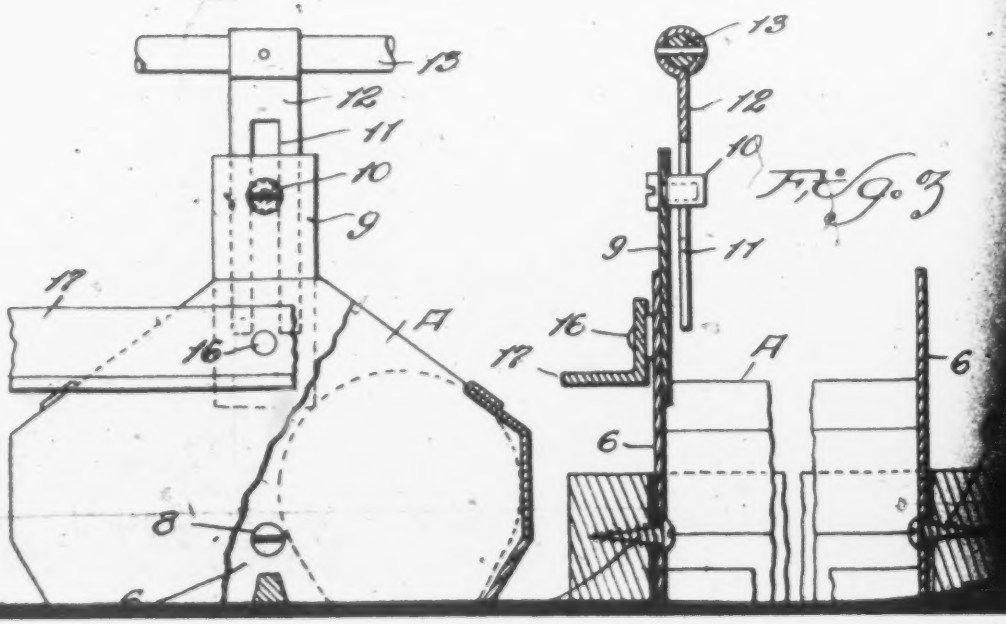


Fig. 3

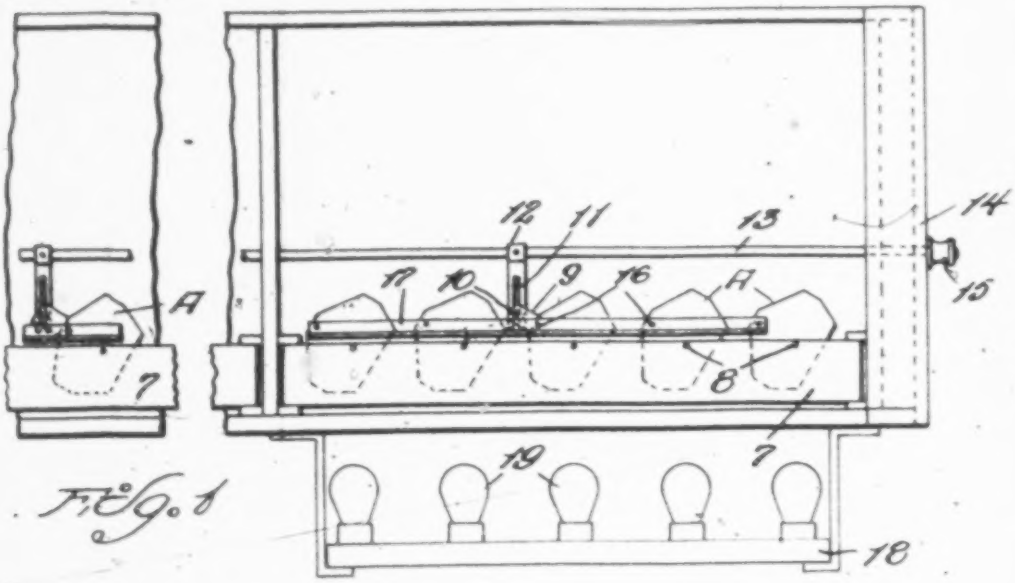


Fig. 1

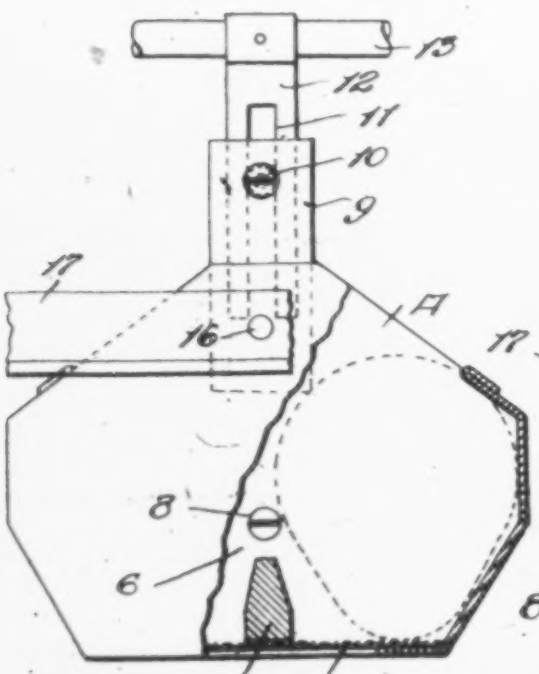


Fig. 2

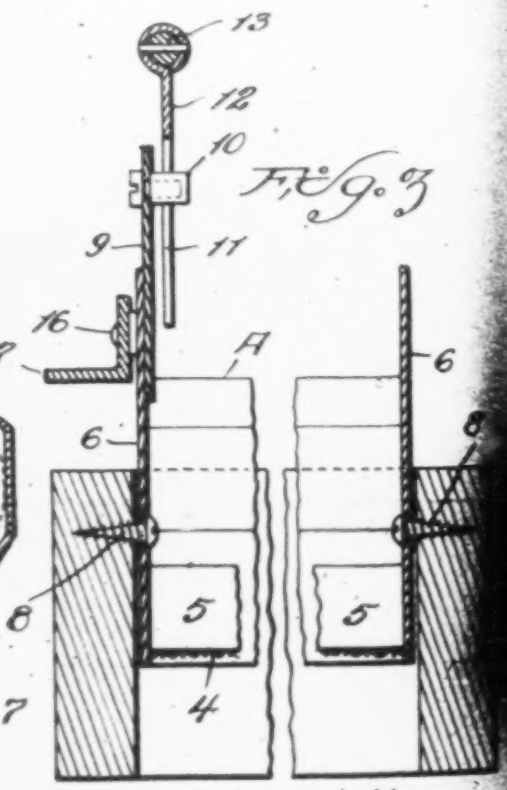


Fig. 3

INVENTOR JAMES L. NIX,

By James L. Hopkins, Attorney

Patented Aug. 4, 1925. 1,548,478

UNITED STATES PATENT OFFICE.

JAMES L. NIX, OF HOMER CITY, PENNSYLVANIA.

EGG TRAY.

Application filed January 28, 1924. Serial No. 688,906.

To all whom it may concern:

Be it known that I, JAMES L. NIX, a citizen of the United States of America, residing at Homer City, in the county of Indiana and State of Pennsylvania, have invented certain new and useful Improvements in Egg Trays, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to an improved egg tray for use in incubation and has for its object to provide a tray having turning means, which turning means are disconnected by the operation of withdrawing the tray from the incubator; the tray also having egg compartments provided with perforate bottoms, enabling the eggs to be tested without removal from the tray.

The tray of my invention provides for holding the eggs on end with the result of increasing the egg carrying capacity of the tray; while the eggs lie in the proper position, approximately the horizontal for incubating being successively carried with their opposite sides uppermost.

Other advantages incident to my invention will be apparent from the following description.

Drawings.

Fig. 1 is a transverse vertical view of an apparatus embodying my invention.

Fig. 2 is an enlarged detailed end view of the center receptacle of each egg tray.

Fig. 3 is a detailed view illustrating the contact between the center receptacle shown in Fig. 2 and the operating rod by which the egg receptacles are turned.

Description.

As shown in the drawing I provide a series of elongated cradles A, having bulging parallel sides of the form illustrated in Figs. 1 and 2, wherein the eggs are deposited in vertical position as shown in fixed upon the transverse rod 13 which extends through the wall 14 of the incubator and terminates in a knob 15. In each of the drawers 7 the cradles A are connected to each other by pintles 16 extending into the connecting bar 17. A transverse rack 18 carries electric lamps 19, one lamp for each of the cradles A. Bottoms 4 of said cradles A being perforate, the eggs may be tested as to fertility and life by pulling the drawer 7 outwardly so that each of the eggs may be viewed downwardly against the light of the lamps 19 without removal of the egg from the cradle A wherein it rests.

Mode of operation.

The drawer 7 may be withdrawn at pleasure for the purpose of examining its contents, its initial outward movement drawing the prong 10 out of contact with the slot 11, the rod 13 and its attached bar 12 remaining in place.

The position in which the eggs are held within the cradles A, as above described, is the ideal position for incubating (see Fig. 1) and the turning is effected by a single pull or thrust upon the knob 15 to the limit of its movement in the desired direction.

I have illustrated and described the preferred embodiment of my invention, and the drawing and description are not intended to be construed as limiting my invention but merely as illustrative thereof. Structural changes can be made without departure from my invention as defined in the following claims.

I claim—

1. An egg tray composed of cradles each having bulging parallel sides contoured and spaced to receive eggs in pairs and standing on end; a perforate bottom; a longitudinal parting strip mounted in contact with said bottom; and ends supporting the cradles and pivotally mounted at a point in alinement with the center of gravity of the cradle; in combination with a reciprocating mechanism

To all whom it may concern:

Be it known that I, JAMES L. NIX, a citizen of the United States of America, residing at Homer City, in the county of Indiana and State of Pennsylvania, have invented certain new and useful Improvements in Egg Trays, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to an improved egg tray for use in incubation and has for its object to provide a tray having turning means, which turning means are disconnected by the operation of withdrawing the tray from the incubator; the tray also having egg compartments provided with perforate bottoms, enabling the eggs to be tested without removal from the tray.

The tray of my invention provides for holding the eggs on end with the result of increasing the egg carrying capacity of the tray; while the eggs lie in the proper position, approximately the horizontal for incubating being successively carried with their opposite sides uppermost.

Other advantages incident to my invention will be apparent from the following description.

Drawings.

Fig. 1 is a transverse vertical view of an apparatus embodying my invention.

Fig. 2 is an enlarged detailed end view of the center receptacle of each egg tray.

Fig. 3 is a detailed view illustrating the contact between the center receptacle shown in Fig. 2 and the operating rod by which the egg receptacles are turned.

Description.

As shown in the drawing I provide a series of elongated cradles A, having bulging parallel sides of the form illustrated in Figs. 1 and 2, wherein the eggs are deposited in pairs in vertical position as shown in Fig. 2. The cradle has a perforate bottom 4 and a longitudinal separating strip 5 mounted along the length of said bottom. The end plate 6 is pivoted in place within the drawer 7 as indicated by 8. I prefer to use an odd number of said cradles A in each of the drawers 7, the center cradle in each drawer (illustrated in Fig. 2) having a vertical arm 9 provided with an inwardly projecting prong 10 extending into and riding in the slot 11 of the arm 12. The bar 12 is fixed upon the transverse rod 13 which extends through the wall 14 of the incubator and terminates in a knob 15. In each of the drawers 7 the cradles A are connected to each other by pintles 16 extending into the connecting bar 17. A transverse rack 18 carries electric lamps 19, one lamp for each of the cradles A. Bottoms 4 of said cradles A being perforate, the eggs may be tested as to fertility and life by pulling the drawer 7 outwardly so that each of the eggs may be viewed downwardly against the light of the lamps 19 without removal of the egg from the cradle A wherein it rests.

Mode of operation.

The drawer 7 may be withdrawn at pleasure for the purpose of examining its contents, its initial outward movement drawing the prong 10 out of contact with the slot 11, the rod 13 and its attached bar 12 remaining in place.

The position in which the eggs are held within the cradles A, as above described, is the ideal position for incubating (see Fig. 1) and the turning is effected by a single pull or thrust upon the knob 15 to the limit of its movement in the desired direction.

I have illustrated and described the preferred embodment of my invention, and the drawing and description are not intended to be construed as limiting my invention but merely as illustrative thereof. Structural changes can be made without departure from my invention as defined in the following claims.

I claim—

1. An egg tray composed of cradles each having bulging parallel sides contoured and spaced to receive eggs in pairs and standing on end; a perforate bottom; a longitudinal parting strip mounted in contact with said bottom; and ends supporting the cradles and pivotally mounted at a point in alinement with the center of gravity of the cradle; in combination with a reciprocating mechanism for said cradles having sliding engagement with one of said cradles and arranged to be disconnected therefrom by the withdrawal of said tray from its seat.

2. An egg tray composed of cradles having bulging parallel sides contoured and spaced to receive eggs in pairs and standing on end; a perforate bottom; a longitudinal parting strip mounted in contact with said bottom; and ends supporting the cradles

and pivotally mounted at a point in alinement with the center of gravity of the cradles; in combination with a reciprocating mechanism for said cradles having engagement with the cradles when seated in operative position and arranged to be disengaged therefrom by the withdrawal of the tray from its seat.

3. In an incubator, in combination with an incubator drawer, an egg-tray composed of a plurality of cradles; a reciprocating connecting bar for said cradles; a reciprocating mechanism for said cradles mounted in said incubator, having sliding engagement with one of said cradles and arranged to be disengaged therefrom by the withdrawal of the tray from its seat.

4. An egg tray consisting of a plurality of cradles, each cradle having a perforate bottom; two end plates and bulging parallel sides, said end plates and sides being contoured for the reception of two rows of eggs arranged in pairs; a longitudinal parting strip fixed in said cradles and arranged to separate said rows of eggs; in combination with a reciprocating mechanism for said cradles arranged to engage with said cradles when the tray is seated and to be disengaged from said cradles by the withdrawal of the tray from its seat.

In testimony whereof I have hereunto affixed my signature.

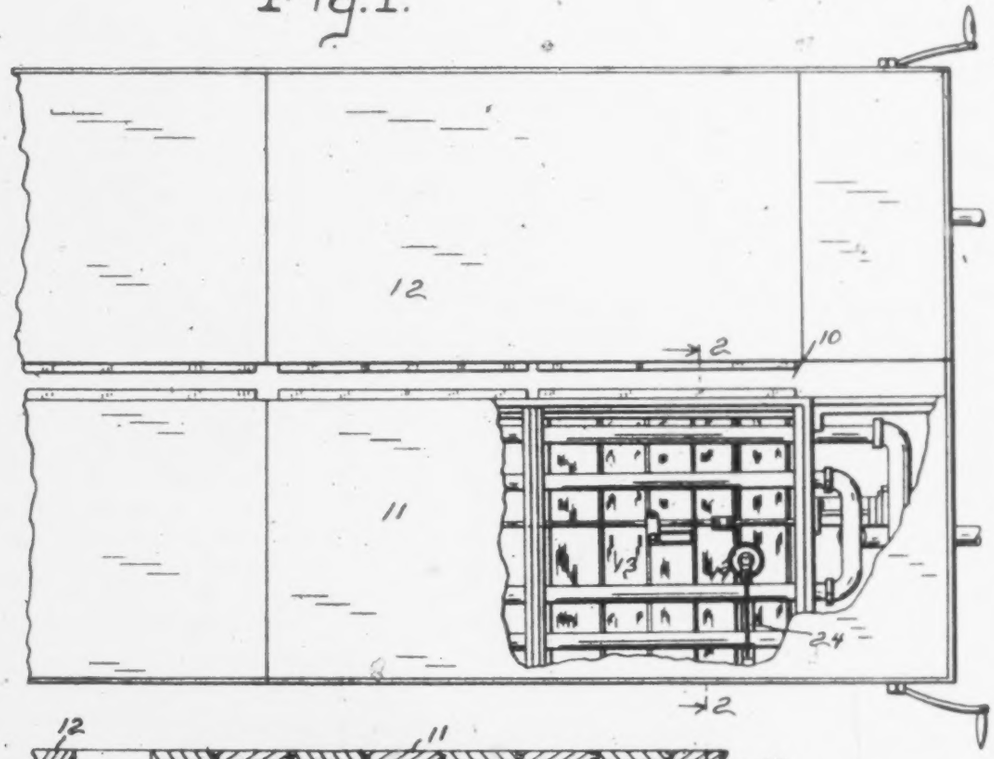
JAMES L. NIX.

March 18, 1930. G. T. MARKEY 1,751,093

VENTILATING AND HUMIDIFYING SYSTEM

Filed Feb. 6, 1926 2 Sheets-Sheet 1

Fig. 1.



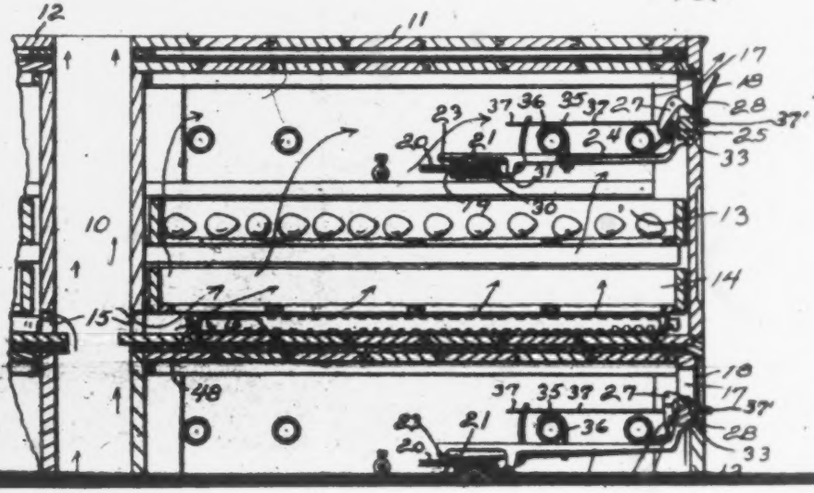
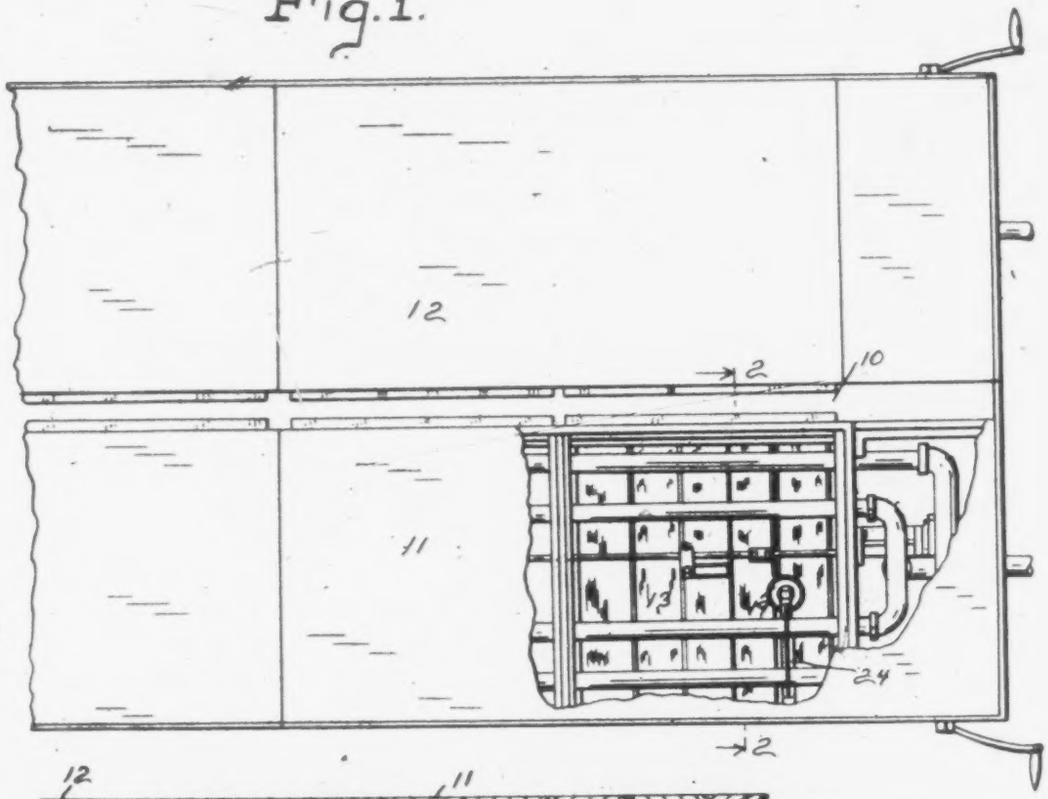


Fig. 2.

Fig. 1.



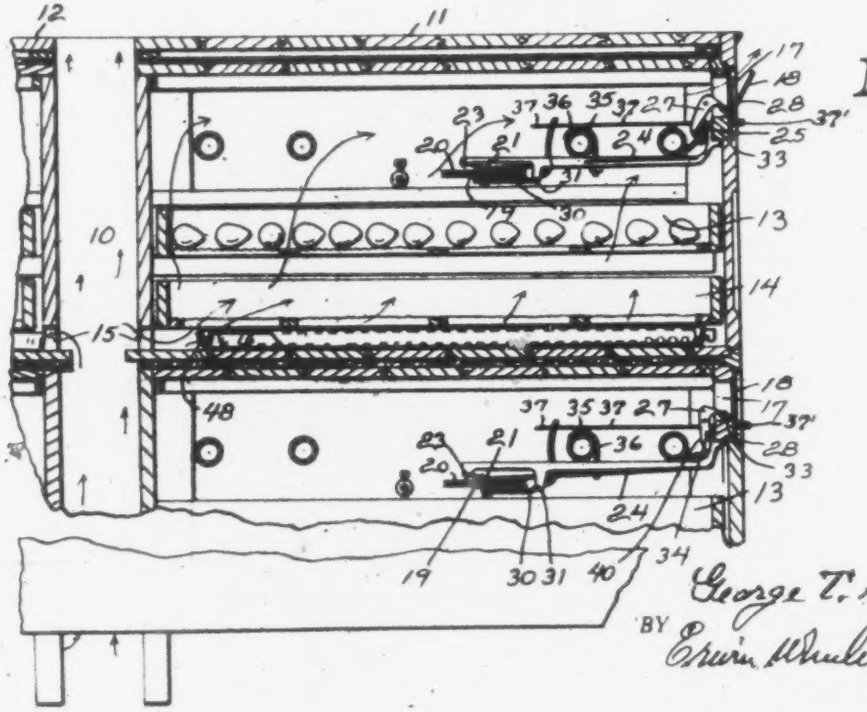


Fig. 2.

INVENTOR
George T. Harkey
BY Erwin Wheeler & Woodard
ATTORNEYS

March 18, 1930. G. T. MARKEY 1,751,093

VENTILATING AND HUMIDIFYING SYSTEM

Filed Feb. 6, 1926 2 Sheets-Sheet 2

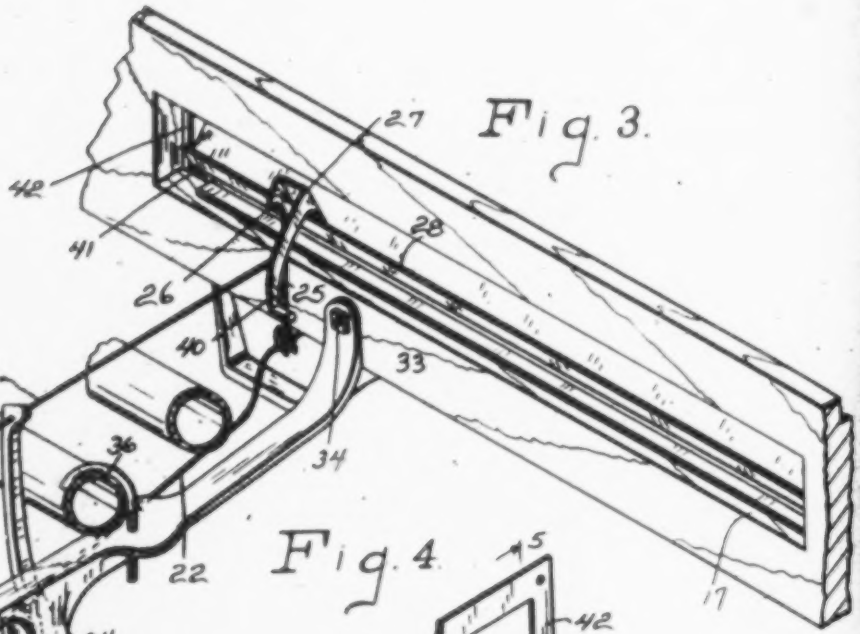


Fig. 3.

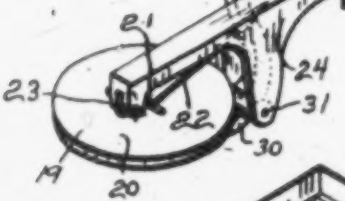


Fig. 4.

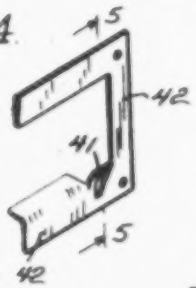


Fig. 5.

Fig. 6.

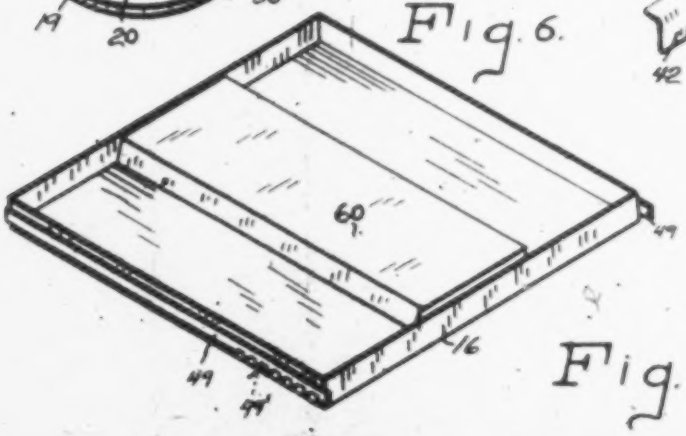
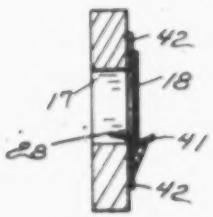
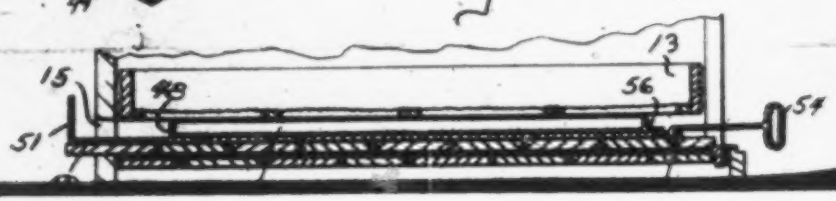


Fig. 7.





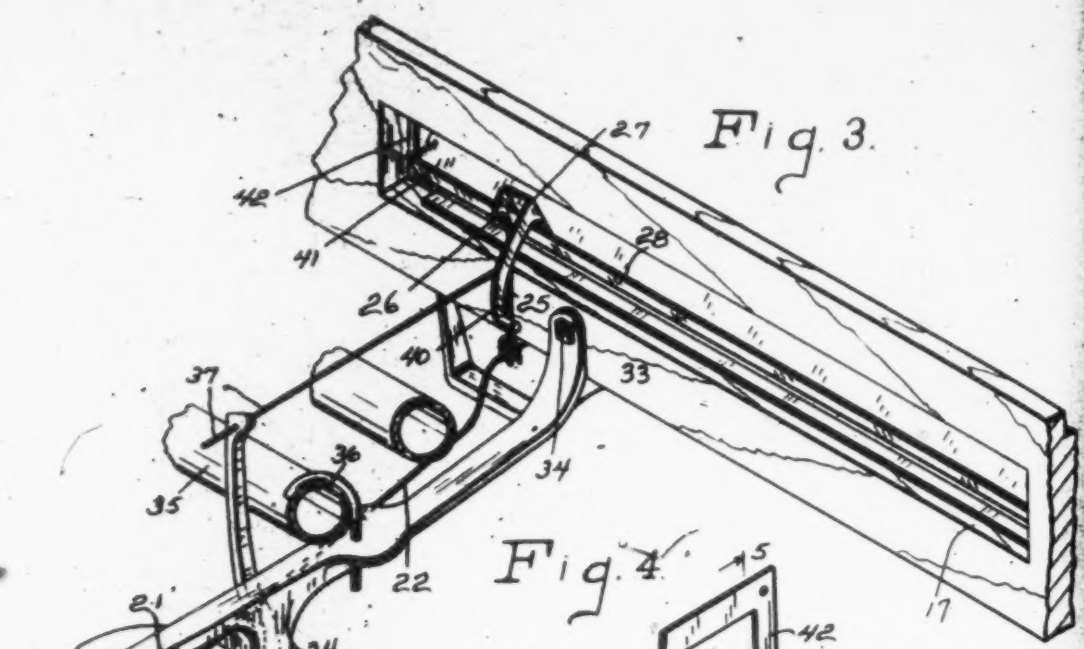


Fig. 3.

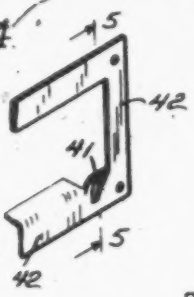


Fig. 4.

Fig. 5.

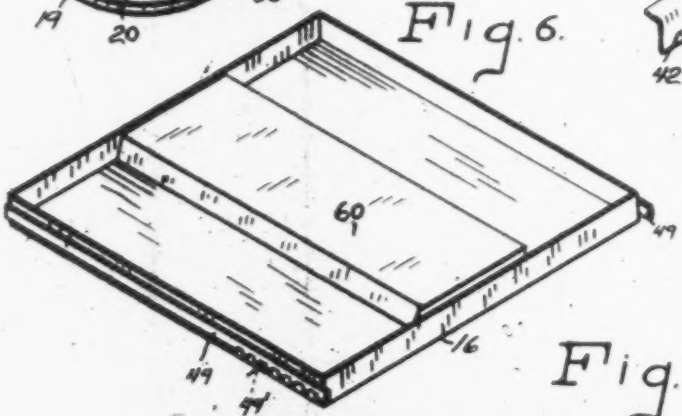


Fig. 6.

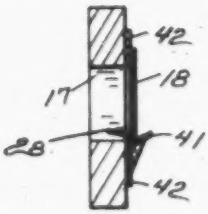
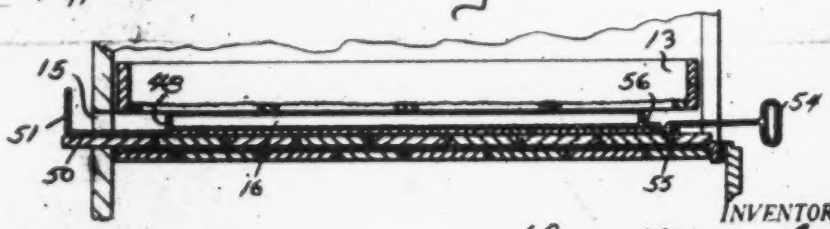


Fig. 7.



INVENTOR.
George T. Markey
BY Evans Wheeler & Woodard
ATTORNEYS.

Patented Mar. 18, 1930 1,751,093

UNITED STATES PATENT OFFICE

GEORGE T. MARKEY, OF FORT ATKINSON, WISCONSIN, ASSIGNOR TO JAMES MANUFACTURING COMPANY, OF FORT ATKINSON, WISCONSIN

VENTILATING AND HUMIDIFYING SYSTEM

Application filed February 6, 1926. Serial No. 86,483.

This invention relates to improvements in ventilating and humidifying systems for incubators, particularly for multiple compartment incubators, commonly designated as mammoth incubators.

Objects of this invention are:—to provide means for adequately controlling the passage of air through the individual compartments; to provide means for assuring an adequate distribution of air throughout each compartment; to provide delicate thermostatically controlled dampers for the respective compartments; to provide simple and effective means for humidifying the air and varying the degree of humidity by varying the area of exposure of the water to the air for absorption, and in general to provide means whereby an incubator may be adequately ventilated, properly humidified, and the ventilation system utilized in part for temperature control within a narrow range of possible variation.

In the drawings:

Figure 1 is a plan view of one end portion of my improved incubator, with parts broken away.

Figure 2 is a sectional view, drawn on line 2—2 of Figure 1, showing superposed compartments, the lower one being partially illustrated in front elevation.

Figure 3 is an isometric view of one of the thermostats and its supports, together with an associated outlet damper in the front wall of the incubator, a fragment of which is shown.

Figure 4 is a detail view of one end portion of the damper frame.

[illegible] of the same on

In the type of incubator illustrated in the drawings, one or more tiers of superposed egg receiving compartments are arranged end to end in association with an air passage 10 extending along the rear wall of the compartment of each tier. In the construction as illustrated in Figure 1, the compartments 11 and 12 are arranged with their backs opposing and spaced apart to form the air passage 10.

The number of compartments vertically superposed in each tier and the number in lineal alignments may be varied to increase or decrease the capacity of the incubator by increasing or decreasing the number of compartments, and in a companion application bearing even date herewith Serial No. 86,483, filed February 6, 1926, means are illustrated for expanding the elements of the heating system to suit the requirements of such variations in capacity. The structural features of the egg trays 13 are not essential to the invention herein claimed. The egg trays may be of any ordinary construction, except as hereinafter specified, and further description of such egg trays in this application is, therefore, unnecessary, except to say that the egg trays 13 and the nursery trays 14 have foraminous bottoms which permit air circulation therethrough and promote distribution of the air currents.

Air from the passage or flue 10 is permitted to enter each compartment through a horizontal slot 15 in its rear wall, whence it passes over a humidifying pan 16 and upwardly through the nursery tray and egg tray to the upper portion of the compartment, and thence outwardly through a slot 17 in the front wall

GEORGE T. MARKEY, OF FORT ATKINSON, WISCONSIN, ASSIGNOR TO JAMES MANUFACTURING COMPANY, OF FORT ATKINSON, WISCONSIN

VENTILATING AND HUMIDIFYING SYSTEM

Application filed February 6, 1926. Serial No. 86,482.

This invention relates to improvements in ventilating and humidifying systems for incubators, particularly for multiple compartment incubators, commonly designated as mammoth incubators.

Objects of this invention are:—to provide means for adequately controlling the passage of air through the individual compartments; to provide means for assuring an adequate distribution of air throughout each compartment; to provide delicate thermostatically controlled dampers for the respective compartments; to provide simple and effective means for humidifying the air and varying the degree of humidity by varying the area of exposure of the water to the air for absorption, and in general to provide means whereby an incubator may be adequately ventilated, properly humidified, and the ventilation system utilized in part for temperature control within a narrow range of possible variation.

In the drawings:

Figure 1 is a plan view of one end portion of my improved incubator, with parts broken away.

Figure 2 is a sectional view, drawn on line 2—2 of Figure 1, showing superposed compartments, the lower one being partially illustrated in front elevation.

Figure 3 is an isometric view of one of the thermostats and its supports, together with an associated outlet damper in the front wall of the incubator, a fragment of which is shown.

Figure 4 is a detail view of one end portion of the damper frame.

Figure 5 is a sectional view of the same on line 5—5 of Figure 4 showing also the frame in section.

Figure 6 is a detail isometric view of the improved humidifying pan.

Figure 7 is a fragmentary sectional view of one of the humidifying pans and associated parts, illustrating the means drawn to the same plane as Figure 2 and illustrating the use of said pan as part of the circulation controlling means.

Like parts are identified by the same reference characters throughout the several views.

In the type of incubator illustrated in the drawings, one or more tiers of superposed egg receiving compartments are arranged end to end in association with an air passage 10 extending along the rear wall of the compartment of each tier. In the construction as illustrated in Figure 1, the compartments 11 and 12 are arranged with their backs opposing and spaced apart to form the air passage 10.

The number of compartments vertically superposed in each tier and the number in lineal alignments may be varied to increase or decrease the capacity of the incubator by increasing or decreasing the number of compartments, and in a companion application bearing even date herewith Serial No. 86,483, filed February 6, 1926, means are illustrated for expanding the elements of the heating system to suit the requirements of such variations in capacity. The structural features of the egg trays 13 are not essential to the invention herein claimed. The egg trays may be of any ordinary construction, except as hereinafter specified, and further description of such egg trays in this application is, therefore, unnecessary, except to say that the egg trays 13 and the nursery trays 14 have foraminous bottoms which permit air circulation therethrough and promote distribution of the air currents.

Air from the passage or flue 10 is permitted to enter each compartment through a horizontal slot 15 in its rear wall, whence it passes over a humidifying pan 16 and upwardly through the nursery tray and egg tray to the upper portion of the compartment, and thence outwardly through a slot 17 in the front wall to the exterior. The flow of air through the outlet slot 17 is controlled by a damper 18, the position of which is determined by a thermostat 19 having a movable wall 20 connected at 21 with a lever 22 pivoted at 23 to a supporting arm 24. The lever 22 has its long arm connected by a link 25 with a rocker pin 26 journaled in a bracket 27, which is secured to a flange 28 projecting inwardly from the damper 18. The thermostat 19 is adjustably supported at a short distance above the eggs and near the center of the compartment

by a lever 30, fulcrumed at 31 to depending ears carried by a bar 32, said bar being secured to a frame member 33 by a bolt 34, and being suspended at an intermediate point from one of the heating pipes 35 by a hook-shaped hanger 36. The supporting lever 30 of the thermostat has an upwardly projecting arm through which a screw threaded adjusting rod 37 extends as illustrated in Figure 3. This adjusting rod 37 extends to the exterior and is provided with a projecting end member 37′ whereby it may be rotated to swing the lever upon its fulcrum 31 to adjust the thermostat in its proper position.

The arrangement is such that as the temperature rises, the movable top wall or diaphragm of the thermostat is lifted by expansion of its contained fluid and being connected with the lever 22 in close proximity to its fulcrum 23, the movement is multiplied in the long arm of the lever and link 25 in such a manner that the damper will be opened or closed to the required extent in correspondence with the movement of the diaphragm 20 as the temperature within the chamber rises or falls.

The damper 18 is preferably formed of thin sheet metal, suitably embossed or ribbed to provide adequate strength with minimum weight of material, it being important to reduce the inertia to a minimum. The inwardly projecting flange and associated bracket tend to counter-balance the weight of the damper wing 18, and a weighted arm 40 on the bracket 27 tends to cause the damper to close by gravity. The ends of the damper wing 18 are extended beyond the flange 28 and are loosely supported within the angles formed by outwardly turned lips 41 on a sheet metal frame 42 secured to the exterior surface of the compartment wall along the margins of the outlet slot.

Inasmuch as one of these dampers must be provided for each compartment and operated under light pressure under conditions which require extreme sensitiveness, the importance of these features from the standpoint of efficiency and minimum cost of construction will be readily appreciated.

The admission of air from the rear side of the compartment, or from the passageway or flue 10 [illegible] such a flue is provided, is also preferably controlled,—not only in accordance with the requirements in each stage within the compartment. The moisture [illegible] is of less width (front to rear) than the [illegible] compartment and by adjusting the moisture [illegible] inwardly in the direction of the inlet 15 the inlet port may be substantially closed or fully opened as desired, said rear wall of the moisture pan 48 serving as a damper for the reason that when this rear wall of the moisture pan is directly underneath the rear wall of the nursery tray the admission of air will be substantially cut off. By moving the moisture pan forwardly to the position in which it is shown in Figure 7 air is permitted to pass upwardly through the foraminous bottom, said bottom being located at a substantial distance above the bottom of the nursery tray. It is locked by latch bar 49 engaging lug 49′.

In addition to the use of the moisture pan for regulating the admission of air to the compartment, I find it desirable to employ a slide 50 having an up-turned flange 51 within the passage 10, whereby the air entering the compartment is required to pass downwardly between the flange 51 and the rear wall of the compartment in order to reach the slot 15. The slide 50 may be moved forwardly or backwardly to increase or reduce the size of this passage, according to the position of the compartment in relation to the other compartments of the series and to counteract the tendency due to the location of any compartment in the series to permit an increased or decreased velocity of the circulating currents through the inlet. The adjustment of the flange 51 may be permanent after an incubator has once been installed and tested, but the adjustment of the moisture pan to additionally control the flow of air will be made from time to time in accordance with the internal conditions and the stage of incubation within any given compartment.

The moisture pan may be conveniently adjusted by means of the hook-shaped member 54 illustrated in Figure 7 where it is shown as engaging a projection 55 from the [illegible] margins of the slide 50. The same hook [illegible] be employed to engage a projection 56 [illegible] pan 16.

The capacity of the moisture pan [illegible] humidifying the air in the compartment [illegible] also be regulated in part by the adjustment of the pan as above described, but [illegible]

justing rod 37 extends as illustrated in Figure 3. This adjusting rod 37 extends to the exterior and is provided with a projecting end member 37′ whereby it may be rotated to swing the lever upon its fulcrum 31 to adjust the thermostat in its proper position.

The arrangement is such that as the temperature rises, the movable top wall or diaphragm of the thermostat is lifted by expansion of its contained fluid and being connected with the lever 22 in close proximity to its fulcrum 23, the movement is multiplied in the long arm of the lever and link 25 in such a manner that the damper will be opened or closed to the required extent in correspondence with the movement of the diaphragm 20 as the temperature within the chamber rises or falls.

The damper 18 is preferably formed of thin sheet metal, suitably embossed or ribbed to provide adequate strength with minimum weight of material, it being important to reduce the inertia to a minimum. The inwardly projecting flange and associated bracket tend to counter-balance the weight of the damper wing 18, and a weighted arm 40 on the bracket 27 tends to cause the damper to close by gravity. The ends of the damper wing 18 are extended beyond the flange 28 and are loosely supported within the angles formed by outwardly turned lips 41 on a sheet metal frame 42 secured to the exterior surface of the compartment wall along the margins of the outlet slot.

Inasmuch as one of these dampers must be provided for each compartment and operated under light pressure under conditions which require extreme sensitiveness, the importance of these features from the standpoint of efficiency and minimum cost of construction will be readily appreciated.

The admission of air from the rear side of the compartment, or from the passageway or flue 10 where such a flue is provided, is also preferably controlled,—not only in accordance with the requirements in each stage of incubation, but also for the purpose of counteracting the tendency of the air in the flue 10 to develop currents through one compartment at the expense of another. To accomplish this, the inlet slots 15 of the several compartments are made of substantially the same height as the rear wall 48 of the moisture pan 16. The bottom of the nursery tray is immediately above the moisture pan, with just sufficient clearance to allow the moisture pan to be moved forwardly or backwardly is directly underneath the rear wall of the nursery tray the admission of air will be substantially cut off. By moving the moisture pan forwardly to the position in which it is shown in Figure 7 air is permitted to pass upwardly through the foraminous bottom, said bottom being located at a substantial distance above the bottom of the nursery tray. It is locked by latch bar 49 engaging lug 49′.

In addition to the use of the moisture pan for regulating the admission of air to the compartment, I find it desirable to employ a slide 50 having an up-turned flange 51 within the passage 10, whereby the air entering the compartment is required to pass downwardly between the flange 51 and the rear wall of the compartment in order to reach the slot 15. The slide 50 may be moved forwardly or backwardly to increase or reduce the size of this passage, according to the position of the compartment in relation to the other compartments of the series and to counteract the tendency due to the location of any compartment in the series to permit an increased or decreased velocity of the circulating currents through the inlet. The adjustment of the flange 51 may be permanent after an incubator has once been installed and tested, but the adjustment of the moisture pan to additionally control the flow of air will be made from time to time in accordance with the internal conditions and the stage of incubation within any given compartment.

The moisture pan may be conveniently adjusted by means of the hook-shaped member 54 illustrated in Figure 7 where it is shown as engaging a projection 55 from the front margins of the slide 50. The same hook may be employed to engage a projection 56 on the pan 16.

The capacity of the moisture pan 16 for humidifying the air in the compartment may also be regulated in part by the adjustment of the pan as above described, but in larger part by employing an invertible pan 60 therein, which is approximately one-third of the capacity of the pan 16. When the pan 60 is inverted within the pan 16, as shown in Figure 6, only two-thirds of the water in the pan will be exposed to the air for moisture absorption. If the pan 60 is right side up and both pans filled with water, the full capacity of the pan 16, without the pan 60, will be realized. But, if only pan 60 is filled with water, the exposure for moisture absorption will, of

course, be only one-third of the maximum capacity of the pan 16.

Therefore, by utilizing the auxiliary pan 60 in connection with adjustments of the pan 16 toward or away from the air inlet slot 15, adequate regulation of the moisture contained within the compartment is obtained without such interference with the ventilating currents as would be required in the absence of the auxiliary pan 60.

From the foregoing description, it will be apparent that preliminary control of the ventilation in each compartment may be obtained manually by adjustment of the slide 50 and of the moisture pan 16. Subsequently, an automatic control is obtained by thermostatically adjusting the damper 18. The inlet and outlet slots have a length nearly as great as the horizontal dimensions of the front and rear walls of the compartment and the air entering through the inlet slot 15 will be distributed in part by the foraminous bottom of the nursery tray 14 and in part by the similarly formed bottom of the egg tray and by the eggs. The tendency of the air to form a vertically ascending column is thus counteracted in part, and additionally counteracted by locating the outlet on the opposite side of the chamber. The location of the thermostat is also important, both as to its position in the central portion of the compartment and as to its position immediately above the eggs, whereby the damper 18 may be controlled in strict accordance with the temperature of the air surrounding the eggs. Proper conditions of ventilation and humidity are, therefore, obtainable, not only throughout a single compartment, but throughout a series of compartments connected with a common air supply flue, regardless of whether the compartments are superposed or lineally aligned. It is, of course, not material to the invention herein claimed whether the air is circulated by gravity or under forced draft.

It will also be obvious that while I have described the flue 10 as a part of the incubator, this is not an essential feature except in cases where incubator chambers are arranged back to back. In such cases the opposed chambers are separated to allow air to enter through the rear walls and this forms the flue 10. [illegible] arranged in a single

of an opposing wall, said slots being of a length substantially equal to the length of the chamber, means for manually controlling the passage of air through one of the slots by varying its width and means for thermostatically controlling the passage of air through the other, whereby the capacity of the inlet slot may be proportioned to the normal requirements for delivery of air through the outlet, said compartment having an egg tray at an intermediate point adapted to promote distribution of the air current throughout the portion of the compartment occupied by said tray by partially obstructing the flow of air at all points in the space occupied by the tray.

2. In an incubator compartment, a moisture pan, a nursery tray having a foraminous bottom and located above the moisture pan, and an egg tray above the nursery tray, said compartment having an air inlet aperture in one wall communicating with the space below the nursery tray substantially along its entire length and also having an air outlet aperture in the opposing wall communicating with the exterior from the space above the egg tray, a valve controlling the flow of air through the outlet, a baffle, spaced from the rear wall and forming a downwardly extending normally constantly open passage leading to the inlet aperture, means for manually varying the capacity of said inlet aperture, and a thermostat within the space above the egg tray, operatively connected to said valve.

3. In an incubator compartment, a moisture pan, a nursery tray having a foraminous bottom and located above the moisture pan, and an egg tray above the nursery tray, said compartment having an air inlet aperture in one wall communicating with the space below the nursery tray substantially along its entire length and also having an air outlet aperture in the opposing wall communicating with the exterior from the space above the egg tray, the space within the compartment at and above the level of the outlet being wholly unobstructed in all directions from the aperture in said wall to each of the other walls of the compartment, said aperture also having a length substantially equal to that of the compartment, a valve controlling the flow of air through the outlet, and a thermostat within

ments as would be required in the absence of the auxiliary pan 60.

From the foregoing description, it will be apparent that preliminary control of the ventilation in each compartment may be obtained manually by adjustment of the slide 50 and of the moisture pan 16. Subsequently, an automatic control is obtained by thermostatically adjusting the damper 18. The inlet and outlet slots have a length nearly as great as the horizontal dimensions of the front and rear walls of the compartment and the air entering through the inlet slot 15 will be distributed in part by the foraminous bottom of the nursery tray 14 and in part by the similarly formed bottom of the egg tray and by the eggs. The tendency of the air to form a vertically ascending column is thus counteracted in part, and additionally counteracted by locating the outlet on the opposite side of the chamber. The location of the thermostat is also important, both as to its position in the central portion of the compartment and as to its position immediately above the eggs, whereby the damper 18 may be controlled in strict accordance with the temperature of the air surrounding the eggs. Proper conditions of ventilation and humidity are, therefore, obtainable, not only throughout a single compartment, but throughout a series of compartments connected with a common air supply flue, regardless of whether the compartments are superposed or lineally aligned. It is, of course, not material to the invention herein claimed whether the air is circulated by gravity or under forced draft.

It will also be obvious that while I have described the flue 10 as a part of the incubator, this is not an essential feature except in cases where incubator chambers are arranged back to back. In such cases the opposed chambers are separated to allow air to enter through their rear walls and this forms the flue 10. Where the incubators are arranged in a single lineal series, the flue 10 is not essential, but it will be found desirable in such cases to set the incubator with its back near a wall of the room which is thus made to co-operate in forming a flue or quiet space free from drafts when doors or windows are opened.

I claim:

1. In a ventilating system for incubators, an egg compartment having a horizontal slot in the lower portion of one wall, said slot and the chamber space being adapted to allow air to enter in a horizontally flowing sheet and another horizontal slot in the upper portion the outlet, said compartment having an egg tray at an intermediate point adapted to promote distribution of the air current throughout the portion of the compartment occupied by said tray by partially obstructing the flow of air at all points in the space occupied by the tray.

2. In an incubator compartment, a moisture pan, a nursery tray having a foraminous bottom and located above the moisture pan, and an egg tray above the nursery tray, said compartment having an air inlet aperture in one wall communicating with the space below the nursery tray substantially along its entire length and also having an air outlet aperture in the opposing wall communicating with the exterior from the space above the egg tray, a valve controlling the flow of air through the outlet, a baffle, spaced from the rear wall and forming a downwardly extending normally constantly open passage leading to the inlet aperture, means for manually varying the capacity of said inlet aperture, and a thermostat within the space above the egg tray, operatively connected to said valve.

3. In an incubator compartment, a moisture pan, a nursery tray having a foraminous bottom and located above the moisture pan, and an egg tray above the nursery tray, said compartment having an air inlet aperture in one wall communicating with the space below the nursery tray substantially along its entire length and also having an air outlet aperture in the opposing wall communicating with the exterior from the space above the egg tray, the space within the compartment at and above the level of the outlet being wholly unobstructed in all directions from the aperture in said wall to each of the other walls of the compartment, said aperture also having a length substantially equal to that of the compartment, a valve controlling the flow of air through the outlet, and a thermostat within the space above the egg tray operatively connected to said valve, and manually operable means for also controlling the admission of air through said inlet aperture without varying its length.

4. In a ventilating system for incubators, a series of egg compartments each having a horizontally disposed air inlet slot in the lower portion of one wall substantially throughout its length and another horizontally disposed air outlet slot in the upper portion of the opposing wall, intervening nursery and egg trays each adapted to permit a distribu-

tion of air therethrough and to require such distribution in passing through the compartment, a set of walls forming an air passage communicating in common with the inlet slots, manually operable means for separately regulating air delivery to the individual compartments at the inlet slots without varying their length, and means for thermostatically regulating the flow of air through the outlet slots, the space within each compartment at and above the level of its outlet slot being wholly unobstructed in all directions and the thermostatic regulating means including a thermostat located at a substantial distance below said level and in close proximity to the egg tray.

5. In a ventilating system for incubators, a series of egg compartments having air inlet openings, an air supply chamber communicating in common with the several egg compartments through said air inlet openings, and adjustable slides extending through said openings and provided with upwardly extending walls in the air chamber whereby the flow of air in the several compartments may be separately controlled and the air directed downwardly and inwardly to the respective compartments by said slides and their upturned flanges.

6. In an incubator compartment having an air inlet opening in the lower portion of one wall and a narrow outlet opening in the upper portion of an opposing wall, the combination with the walls of said compartment, of an adjustable slide provided with an upturned valve, movable toward and away from the air inlet opening to regulate the flow of air therethrough, a moisture pan in the bottom portion of the compartment in a position to allow the entering air to flow thereover, a nursery tray located above the moisture pan and provided with openings adapted to allow the passage of air therethrough and to facilitate its distribution throughout the area of the compartment, and an egg tray located above the nursery tray and also adapted to permit the passage of air therethrough to the air outlet.

7. In an incubator compartment, having an air inlet opening in the lower portion of one wall and a narrow outlet opening in the upper portion of an opposing wall, the combination with the walls of said compartment, walls at the respective ends of its lower margin, a thermostat supported above the central portion of the egg tray and connections between the thermostat and said tilting valve for adjusting the valve.

8. In an incubator having an egg compartment provided with air inlet and outlet openings and intermediate egg supporting means, the combination with the walls of said compartment, of a frame for the air outlet opening provided with obliquely disposed projecting ears, a thin sheet metal valve having its lower margin loosely pivoted between said ears and the body portion of the frame, and a thermostat supported in proximity to the central portion of the egg tray and operatively connected with said valve.

9. In an incubator having an egg compartment provided with an air inlet and outlet openings and an intermediate egg supporting means and heating pipe connections, the combination with the walls of said compartment, of a frame for the air outlet opening provided with obliquely disposed projecting ears, a thin sheet metal valve having its lower margin loosely pivoted between said ears and the body portion of the frame, and a thermostat supported in proximity to the central portion of the egg tray and operatively connected with said valve having a sustaining connection with one of the heating pipes and one of the walls of the compartment; said heating pipes, egg supporting means and thermostat being located below the level of the outlet opening and the space at and above the level of the outlet opening being wholly unobstructed from the opening in all directions within said chamber.

GEORGE T. MARKEY.

dividual compartments at the inlet slots without varying their length, and means for thermostatically regulating the flow of air through the outlet slots, the space within each compartment at and above the level of its outlet slot being wholly unobstructed in all directions and the thermostatic regulating means including a thermostat located at a substantial distance below said level and in close proximity to the egg tray.

5. In a ventilating system for incubators, a series of egg compartments having air inlet openings, an air supply chamber communicating in common with the several egg compartments through said air inlet openings, and adjustable slides extending through said openings and provided with upwardly extending walls in the air chamber whereby the flow of air in the several compartments may be separately controlled and the air directed downwardly and inwardly to the respective compartments by said slides and their upturned flanges.

6. In an incubator compartment having an air inlet opening in the lower portion of one wall and a narrow outlet opening in the upper portion of an opposing wall, the combination with the walls of said compartment, of an adjustable slide provided with an upturned valve, movable toward and away from the air inlet opening to regulate the flow of air therethrough, a moisture pan in the bottom portion of the compartment in a position to allow the entering air to flow thereover, a nursery tray located above the moisture pan and provided with openings adapted to allow the passage of air therethrough and to facilitate its distribution throughout the area of the compartment, and an egg tray located above the nursery tray and also adapted to permit the passage of air therethrough to the air outlet.

7. In an incubator compartment, having an air inlet opening in the lower portion of one wall and a narrow outlet opening in the upper portion of an opposing wall, the combination with the walls of said compartment, of a moisture pan adjustable toward and away from the air inlet opening to regulate the flow of air therethrough, a nursery tray located above the moisture pan and provided with openings adapted to allow the passage of air therethrough and to facilitate its distribution throughout the area of the compartment, and an egg tray located above the nursery tray and also adapted to permit the passage of air therethrough to the air outlet, said air outlet being provided with a valve pivotally connected with the compartment

ment provided with an inlet and outlet openings and intermediate egg supporting means, the combination with the walls of said compartment, of a frame for the air outlet opening provided with obliquely disposed projecting ears, a thin sheet metal valve having its lower margin loosely pivoted between said ears and the body portion of the frame, and a thermostat supported in proximity to the central portion of the egg tray and operatively connected with said valve.

9. In an incubator having an egg compartment provided with an air inlet and outlet openings and an intermediate egg supporting means and heating pipe connections, the combination with the walls of said compartment, of a frame for the air outlet opening provided with obliquely disposed projecting ears, a thin sheet metal valve having its lower margin loosely pivoted between said ears and the body portion of the frame, and a thermostat supported in proximity to the central portion of the egg tray and operatively connected with said valve having a sustaining connection with one of the heating pipes and one of the walls of the compartment; said heating pipes, egg supporting means and thermostat being located below the level of the outlet opening and the space at and above the level of the outlet opening being wholly unobstructed from the opening in all directions within said chamber.

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March 17, 1931. G. T. MARKEY 1,796,872

EGG TRAY AND EGG TILTING MECHANISM

Filed July 9, 1928 2 Sheets-Sheet 1

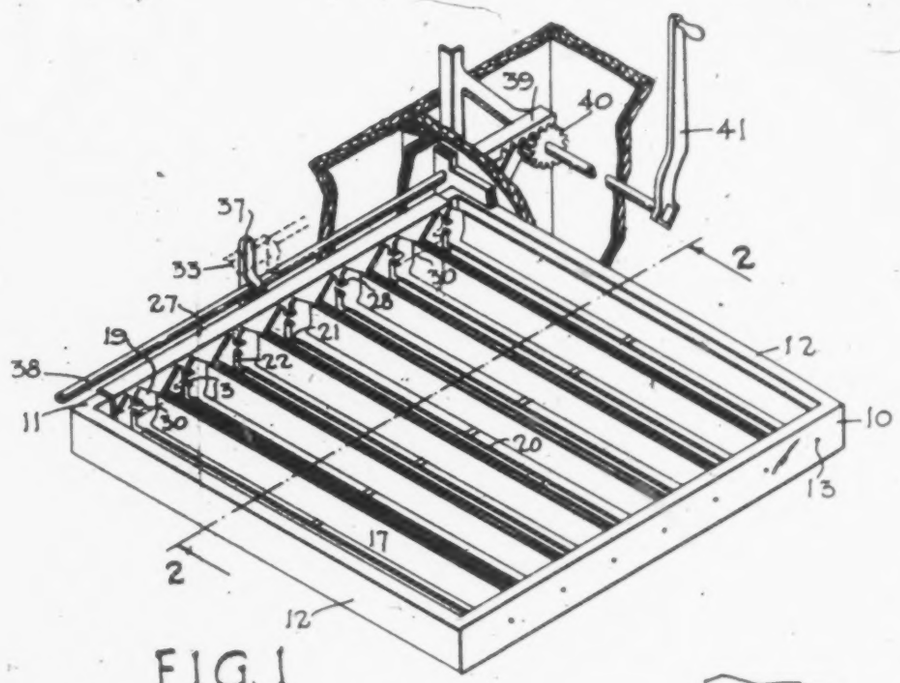


FIG. 1

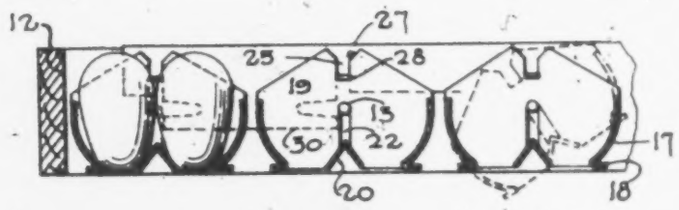
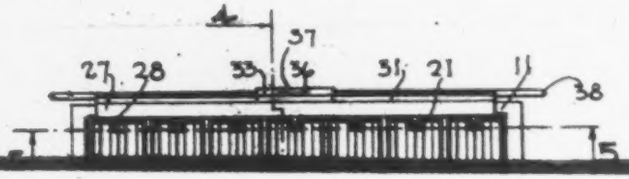


FIG. 2



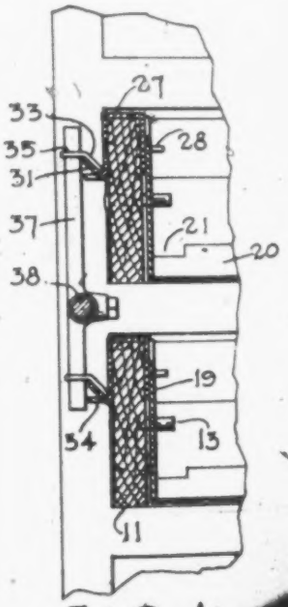


FIG. 4

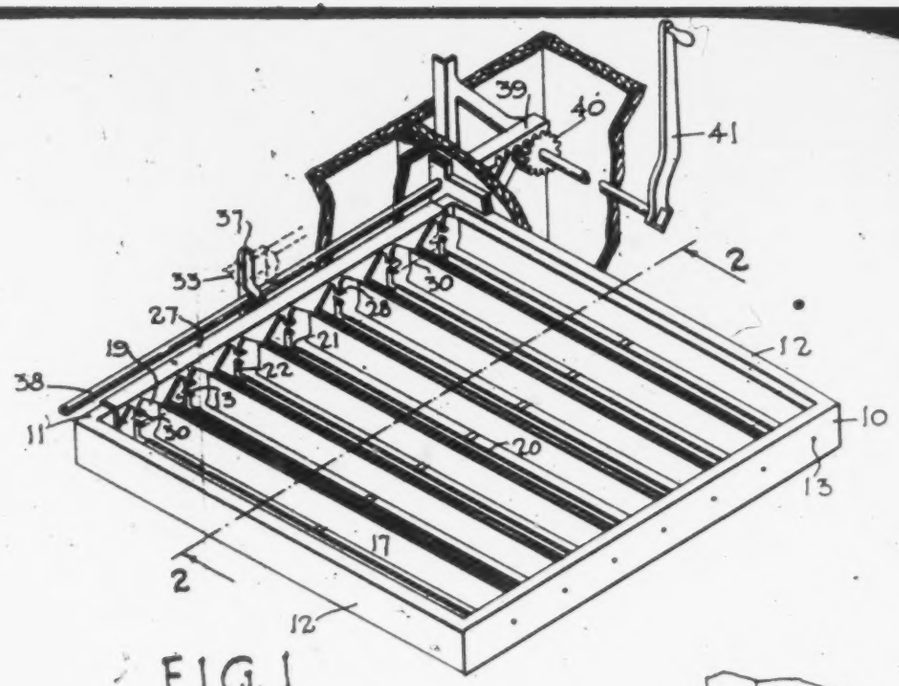


FIG. 1

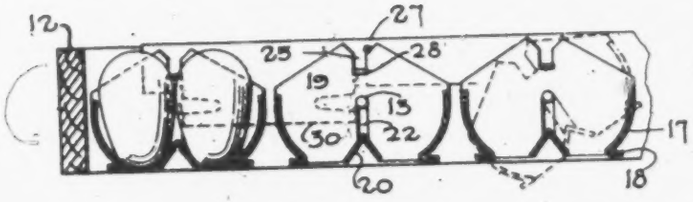


FIG. 2

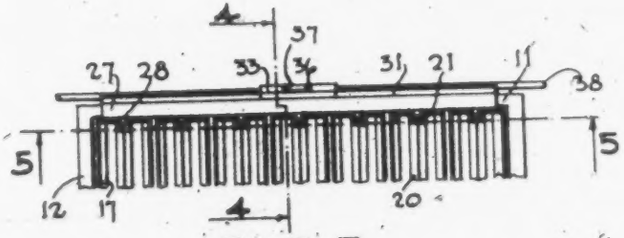


FIG. 3

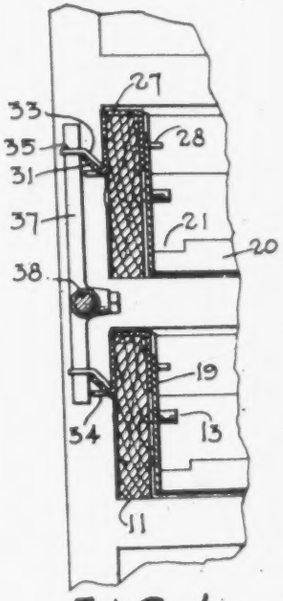


FIG. 4

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March 17, 1931. G. T. MARKEY 1,796,872

EGG TRAY AND EGG TILTING MECHANISM

Filed July 9, 1928 2 Sheets-Sheet 2

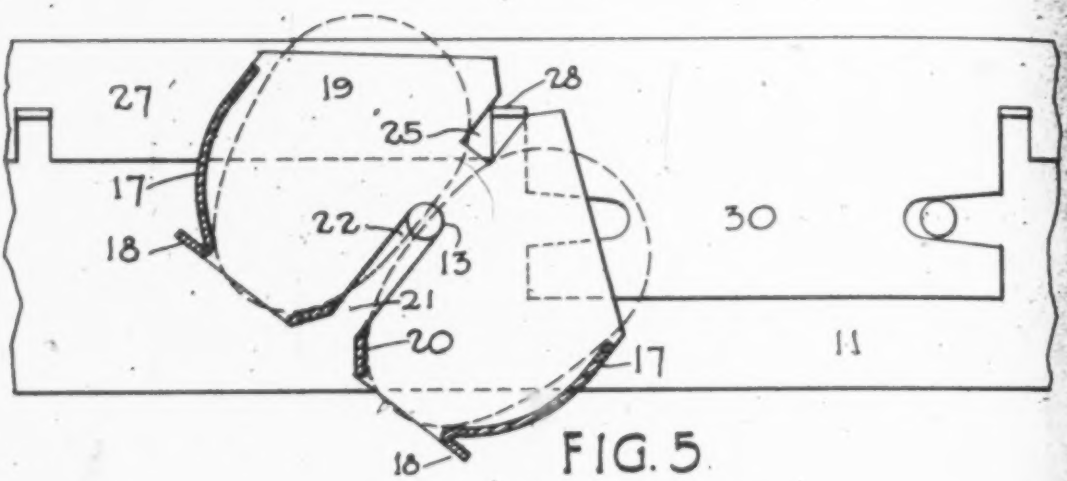


FIG. 5

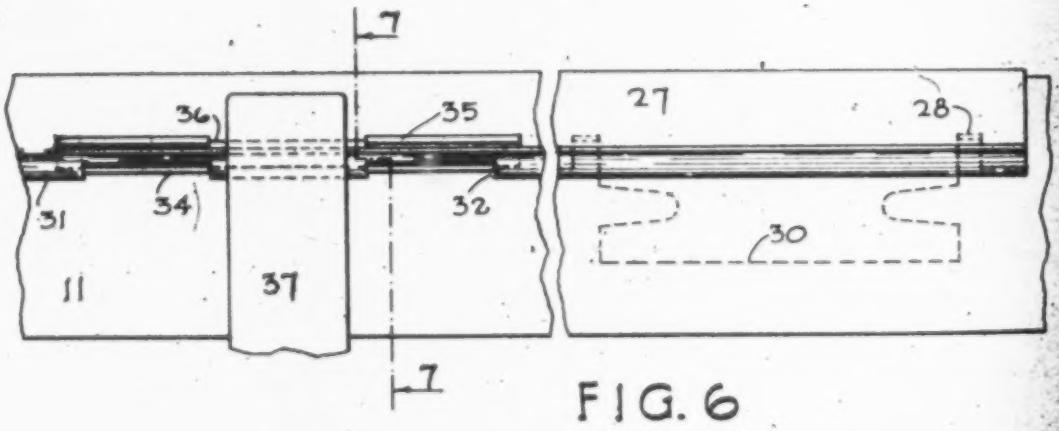
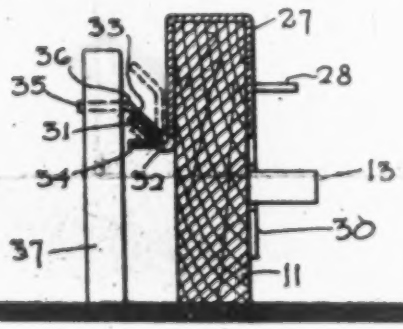


FIG. 6



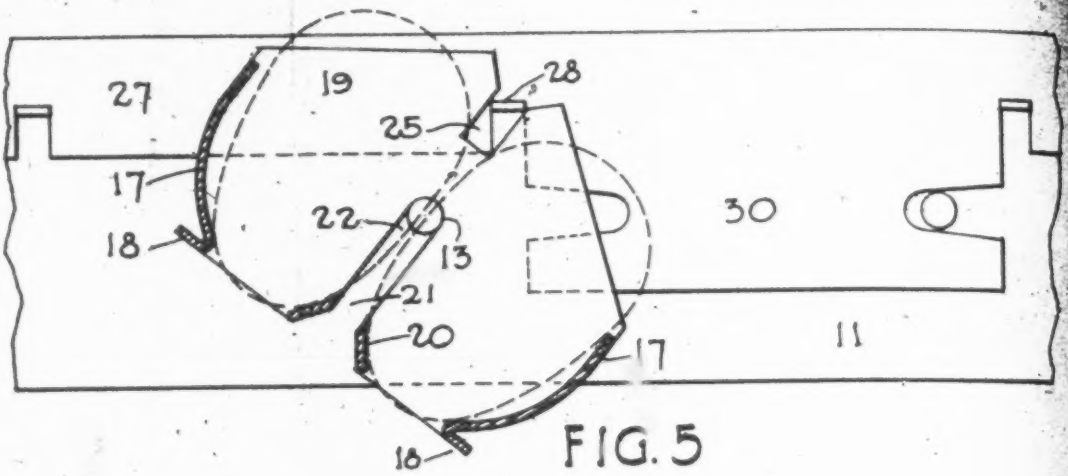


FIG. 5

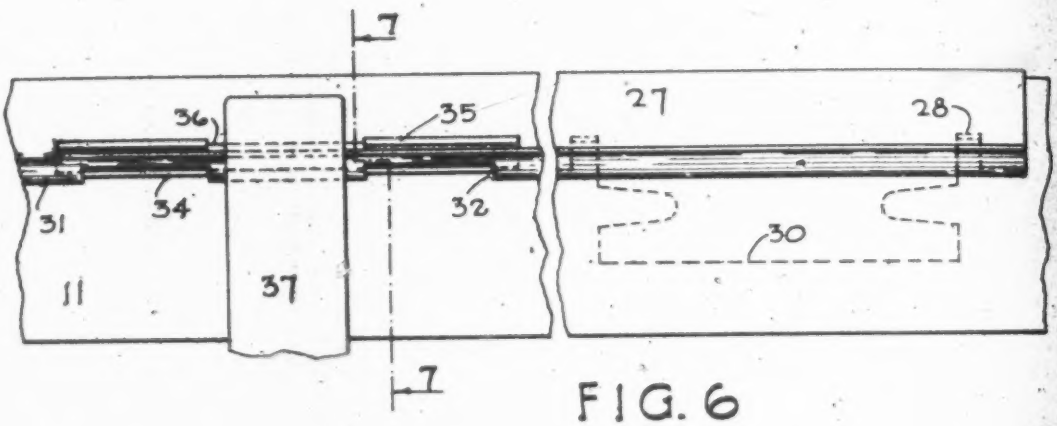


FIG. 6

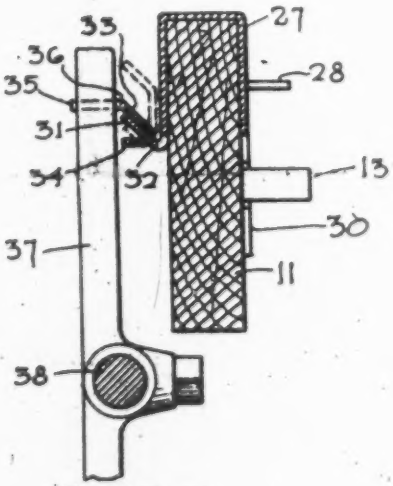


FIG. 7

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Patented Mar. 17, 1931 1,796,872

UNITED STATES PATENT OFFICE

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EGG TRAY AND EGG-TILTING MECHANISM

Application filed July 9, 1928. Serial No. 291,288.

My invention relates to improvements in incubator egg holding and egg tilting devices, with particular reference to incubators of that type in which the eggs may be tilted by mechanical means operable from a point exterior to the incubator.

The primary object of this invention is to provide improved means for holding the eggs in an egg tray and tilting them uniformly at suitable intervals.

A further object is to provide improved means for supporting the egg holding cages removably from a tray frame, each cage being formed to facilitate candling operations by holding the eggs in straight rows, with each cage of a convenient size for manipulation over a source of light, and all of the eggs exposed to rays of light from a source beneath the cage; also to provide cages which may be independently removed for filling or candling purposes, and then replaced, all without material time consuming manipulation.

A still further object of my invention is to provide simple, sanitary, durable and efficient egg holding and tilting means for incubators designed to contain multiple egg trays or tray frames.

In the drawings:

Figure 1 is an isometric view of an egg tray, with associated egg holding and egg tilting mechanism embodying my invention.

Figure 2 is an enlarged fragmentary sectional view drawn generally to line 2—2 of Figure 1, with dotted lines indicating one of the egg holding cages in a tilted position.

Figure 3 is a fragmentary plan view of a [illegible] of the egg trays and associated tilting mechanism.

Figure 4 is a fragmentary sectional view drawn generally to line 4—4 of Figure 3.

Figure 5 is a fragmentary sectional view drawn generally to line 5—5 of Figure 3.

Figure 6 is a fragmentary sectional view drawn generally to line 6—6 of Figure 3.

Figure

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EGG TRAY AND EGG-TILTING MECHANISM

Application filed July 9, 1928. Serial No. 291,280.

My invention relates to improvements in incubator egg holding and egg tilting devices, with particular reference to incubators of that type in which the eggs may be tilted by mechanical means operable from a point exterior to the incubator.

The primary object of this invention is to provide improved means for holding the eggs in an egg tray and tilting them uniformly at suitable intervals.

A further object is to provide improved means for supporting the egg holding cages removably from a tray frame, each cage being formed to facilitate candling operations by holding the eggs in straight rows, with each cage of a convenient size for manipulation over a source of light, and all of the eggs exposed to rays of light from a source beneath the cage; also to provide cages which may be independently removed for filling or candling purposes, and then replaced, all without material time consuming manipulation.

A still further object of my invention is to provide simple, sanitary, durable and efficient egg holding and tilting means for incubators designed to contain multiple egg trays or tray frames.

In the drawings:

Figure 1 is an isometric view of an egg tray, with associated egg holding and egg tilting mechanism embodying my invention.

Figure 2 is an enlarged fragmentary sectional view drawn generally to line 2—2 of Figure 1, with dotted lines indicating one of the egg holding cages in a tilted position.

Figure 3 is a fragmentary plan view of a portion of one of the egg trays and associated tilting mechanism.

Figure 4 is a sectional view, drawn generally to line 4—4 of Figure 3.

Figure 5 is a sectional view, drawn to line 5—5 of Figure 3.

Figure 6 is a rear elevation of a fragment of one of the trays and associated tilting slide.

Figure 7 is a sectional view of the rear wall or member of the tray frame and associated slide, drawn to line 7—7 of Figure 6.

Like parts are identified by the same reference characters throughout the several views.

The tray frames comprise front and rear bars 10 and 11, connected by the side bars 12 to make a rectangular, preferably square, frame. Each of the bars 10 and 11 is provided with a series of inwardly projecting studs formed by inserting pins 13 through the bars at suitable intervals, the inner ends of these pins constituting the studs. The studs projecting inwardly from the front bar are axially aligned in pairs with corresponding studs projecting inwardly from the rear bar, whereby each pair of studs so axially aligned may serve as pivotal supports for an egg holding cage, which will now be described.

The egg holding cages have side walls 17 of a generally arcuate form in cross section. The lower margins of each of these walls are turned to form strengthening flanges 18. The walls 17 are otherwise concavo-convex in form, with their concave surfaces opposed or faced inwardly and pitched divergently from their lower to their upper margins, the ends of the walls being secured to the end walls 19 of the cage. The end walls are also connected along their lower margins by a centrally disposed angle bar 20, having the form of an inverted V in cross section. The side walls 17 and walls 19 and the angle bar 20 form the egg receiving cage.

The bar 20 has its ends notched or cut away at the apex of the bar as indicated at 21 in Figure 5. Each end wall 19 of the cage is provided with a slot 22 extending upwardly from its lower margin, such margin being preferably provided with a V-shaped notch corresponding with the contour of the bar 20. The slot 22 is adapted to receive one of the studs or pins 13, whereby the cage may be supported with its opposite end similarly supported by the corresponding stud of the pair.

The side wall strips 17 of the cage have their lower margins so spaced from the intermediate V-shaped bar 20 as to support rows of eggs along each side of said bar 20, each cage being thus adapted to support two rows of eggs. The eggs are loosely supported

and the cages are sufficiently open to allow air to circulate freely about the eggs. In the construction shown, seven of these egg cages are thus mounted in one tray frame parallel with each other and extending from front to rear. Each tray frame will thus contain fourteen rows of eggs. The means for tilting these cages with their contained eggs will now be described.

It will be observed that each of the end walls of the egg cages is provided with a notch 25 extending downwardly in the wall from its upper margin and substantially in line with the slot 22. A sheet metal channel-shaped slide 27 is adapted to fit over the upper margin of the tray frame and between it and the upwardly projecting marginal portions of the associated egg cages, the inner wall of the slide being provided with projections 28 positioned for entry in the notches 25 of the end walls of the cages. At intervals these slides may be provided on their inner side with guiding extensions 30, which furnish side bearings, both vertically and laterally, to prevent the slide 27 from tilting upon the upper margin of the tray frame. The ends of these projections 30 may be notched to prevent them from interfering with the movement of the slide, if one of the studs 13 should be otherwise in the path of the portion 30.

On the outer side, the vertical wall of the slide 27 has its lower marginal portion 31 turned obliquely outwardly and upwardly, as best shown in Figures 4 and 7, forming with the vertical portion a V-shaped channel and provided at intervals with slots 32, in which a coupling plate 33 may be loosely engaged, said coupling plate having lips 34 which extend through the slots 32 and are bent to form retaining hooks for the coupling member.

The upper margin of the coupling member has its end portions 35 outwardly turned and its middle portion notched at 36 to receive an operating arm 37, carried by a horizontally extending rod 38 connected with an exterior operating rack bar 39, which may be actuated by the pinion 40 and crank 41.

if the operating arm 37 is then in register with the notch 36, the coupling member 33 will be pushed backwardly to the dotted line posi-

to tilt all of the egg supporting cages ried by the associated tray frame. cages may thus be tilted to the dotted position of Figure 2, or reversely tilted the full line position of Figure 5, thus ing or tipping the eggs sufficiently to the nuclei from settling out of place.

The front and rear walls or bars of tray frame are exactly alike, and the of the egg cages are exactly alike. fore the slide 27 may be applied to wall 10 or 11, with equal facility, and the tray is inserted, the wall which the slide will be regarded as the rear and will be pushed into the incubator This effects a saving of considerable in the operation of large incubators taining many trays to be handled. ing that the incubating chamber contains series of trays in superposed relation to other, as indicated in Figure 4, the ing arm 37 may be extended upwardly downwardly from the rod 38, whereby plurality of slides 27 may be simultaneously shifted from a single rod 38.

It will be noted that the slide not only acts as a shifter to tilt the egg cages, but also serves to hold the egg cages in their tilted position by reason of the fact that the slide projections 28 are engaged in the notches 25 in the end walls of the cages. These projections can be inexpensively formed by splitting the material comprising the inner wall of the slide and bending the material between two slits outwardly in the form of a projecting lip.

The separately insertible cages facilitate candling operations, each row of eggs being exposed to rays of light from below which pass through the slots formed by removing the central bottom bar from the lower margins of the side walls. The eggs in the rows, none are apt to be missed in the candling operation, and each cage is of convenient size to be handled and manipulated over the lamp for candling purposes of eggs successively. The trunnions and trunnion receiving slots afford convenient means for quick removal and replacement of successive cages.

By mounting each cage to oscillate on an axial line which extends longitudinally of the cage in proximity to, but above, its center of gravity

will now be described.

It will be observed that each of the end walls of the egg cages is provided with a notch 25 extending downwardly in the wall from its upper margin and substantially in line with the slot 22. A sheet metal channel-shaped slide 27 is adapted to fit over the upper margin of the tray frame and between it and the upwardly projecting marginal portions of the associated egg cages, the inner wall of the slide being provided with projections 28 positioned for entry in the notches 25 of the end walls of the cages. At intervals these slides may be provided on their inner side with guiding extensions 30, which furnish side bearings, both vertically and laterally, to prevent the slide 27 from tilting upon the upper margin of the tray frame. The ends of these projections 30 may be notched to prevent them from interfering with the movement of the slide, if one of the studs 13 should be otherwise in the path of the portion 30.

On the outer side, the vertical wall of the slide 27 has its lower marginal portion 31 turned obliquely outwardly and upwardly, as best shown in Figures 4 and 7, forming with the vertical portion a V-shaped channel and provided at intervals with slots 32, in which a coupling plate 33 may be loosely engaged, said coupling plate having lips 34 which extend through the slots 32 and are bent to form retaining hooks for the coupling member.

The upper margin of the coupling member has its end portions 35 outwardly turned and its middle portion notched at 36 to receive an operating arm 37, carried by a horizontally extending rod 38 connected with an exterior operating rack bar 39, which may be actuated by the pinion 40 and crank 41.

When the tray is placed in the incubator, if the operating arm 37 fails to register with the notch 36, the coupling member 33 will be pushed backwardly to the dotted line position in which it is illustrated in Figure 7, where it will remain until the rack bar 39 and rod 38 are shifted by the pinion and crank to bring the arm 37 into registry with the notch. The coupling member 33 will then drop by gravity to the position by which it is indicated by full lines in Figure 7, after which a continued movement of the rod 38, in either direction, will be transmitted to the slide.

Whenever the slide 27 has been engaged by an operating arm 37, it may be actuated

tray frame are exactly alike, of the egg cages are exactly alike. fore the slide 27 may be applied to wall 10 or 11, with equal facility, and the tray is inserted, the wall which the slide will be regarded as the and will be pushed into the incubator This effects a saving of considerable in the operation of large incubators taining many trays to be handled. ing that the incubating chamber contains series of trays in superposed relation to other, as indicated in Figure 4, the operating arm 37 may be extended upwardly downwardly from the rod 38, whereby plurality of slides 27 may be simultaneously shifted from a single rod 38.

It will be noted that the slide not only acts as a shifter to tilt the egg cages, but also serves to hold the egg cages in their tilted position by reason of the fact that the slide projections 28 are engaged in the notches 25 in the end walls of the cages. These projections can be inexpensively formed by splitting the material comprising the inner wall of the slide and bending the material between two slits outwardly in the form of a projecting lip.

The separately insertible cages facilitate candling operations, each row of eggs being exposed to rays of light from below, which pass through the slots formed by spacing the central bottom bar from the lower margins of the side walls. The eggs being in rows, none are apt to be missed during a candling operation, and each cage is of a convenient size to be handled and manipulated over the lamp for candling the rows of eggs successively. The trunnions and trunnion receiving slots afford convenient means for quick removal and replacement of successive cages.

By mounting each cage to oscillate on an axial line which extends longitudinally of the cage in proximity to, but slightly above, its center of gravity, the power required for tilting is reduced to a minimum and maximum tilting or turning effect on the eggs are obtained, consistent with stability in operation.

It will be observed that all portions of the egg cages are included within the space between the upper and lower margins of the tray frames. This makes it possible to remove a series of tray frames and stack them one upon another preparatory to filling the cages with eggs, or for any other

where economy of space or convenience resulting from the piling of one tray upon another, becomes important.

I claim:

1. An egg supporting cage for incubators, comprising the combination with a pair of end walls, of a set of sheet metal walls, arcuate in cross section and upwardly divergent, and a co-operating longitudinally extending central bottom bar composed of convergent ridge forming members spaced from the side walls connecting the end walls and co-operating with the side walls to support parallel rows of eggs of various sizes in substantially fixed relation to each other.

2. An egg supporting cage for incubators, comprising the combination with a pair of end walls having open ended slots extending upwardly from their bottom margins, of a set of sheet metal walls, arcuate in cross section and upwardly divergent, and a co-operating longitudinally extending central bottom bar, having convergent ridge forming sides also connecting the end walls and co-operating with the side walls to support parallel rows of eggs, in a substantially fixed relation to each other together with a tray frame having pairs of trunnions engageable in said slots, and the ends of the bottom bars being cut away to allow the trunnions to enter the slots to engage the ends of parallel egg trays, the axes of said trunnions being in lines adjacent to the centers of gravity of their respective cages, and means, associated with the cages, for simultaneously tilting them about said axes in opposite directions from vertical planes through said axes.

3. An incubator egg tray, comprising the combination with a tray frame provided with spaced trunnions projecting inwardly from its front and rear walls and axially aligned in pairs, egg receiving cages, each having notched end walls, and adapted to be supported within the tray frame when a pair of trunnions are engaged in the end wall notches, said notches having the form of open ended slots adapted to allow the cages to move downwardly to a point with their centers of gravity slightly below the level of the trunnions, and a slide removably mounted upon one wall of the tray frame and loosely engageable with the cages to tilt the same upon said trunnions, said slide [illegible] portions adapted to ride upon the [illegible] position for interlock-

a pair of trunnions are engaged in the end wall notches, said notches having the form of open slots adapted to allow the cages to move downwardly to a point with their centers of gravity slightly below the level of the trunnions, and a slide mounted upon one wall of the tray frame and automatically engageable with the cages when moved along said wall to tilt the same upon said trunnions, when the slide is actuated each cage being formed of sheet metal strips adapted to allow rows of eggs to become loosely wedged between them and between which strips air may circulate throughout the egg receiving space.

5. An incubator egg tray, comprising the combination with a tray frame having inwardly projecting pairs of trunnions, and egg supporting cages having end walls provided with open ended slots extending upwardly from the bottom margins of the end walls and adapted to receive said trunnions, said end walls being also formed with beveled margins and an intermediate notch for interlocking engagement with a slide actuator, and a slide actuator carried by the tray frame and formed to ride over said beveled margins and loosely interlock with the notched end walls of the cages, and to tilt the same about the axes of said trunnions.

6. An egg tray for incubators comprising the combination with a tray frame, of a series of elongated parallel egg cages, each adapted to loosely support two rows of eggs, each cage having a central bar downwardly pitched in opposite directions from a longitudinal center line in the lower portion of the cage, and side bars of sheet metal, arcuate in cross section, with lower portions convergent toward said central bar and co-operative therewith for supporting rows of eggs between them and the central bar, the space between the side and central bar portions being open and unobstructed, whereby eggs of differing sizes may each find its own anchorage between such convergent portions and be held with stability when the cage is laterally tilted.

7. An incubator egg tray, comprising the combination of a series of longitudinally elongated egg supporting cages having end walls provided with upwardly extending open ended trunnion receiving slots and downwardly extending open ended slide re-

a co-operating longitudinally extending central bottom bar composed of convergent ridge forming members spaced from the side walls connecting the end walls and co-operating with the side walls to support parallel rows of eggs of various sizes in substantially fixed relation to each other.

2. An egg supporting cage for incubators, comprising the combination with a pair of end walls having open ended slots extending upwardly from their bottom margins, of a set of sheet metal walls, arcuate in cross section and upwardly divergent, and a co-operating longitudinally extending central bottom bar, having convergent ridge forming sides also connecting the end walls and co-operating with the side walls to support parallel rows of eggs, in a substantially fixed relation to each other together with a tray frame having pairs of trunnions engageable in said slots, and the ends of the bottom bars being cut away to allow the trunnions to enter the slots to engage the ends of parallel egg trays, the axes of said trunnions being in lines adjacent to the centers of gravity of their respective cages, and means, associated with the cages, for simultaneously tilting them about said axes in opposite directions from vertical planes through said axes.

3. An incubator egg tray, comprising the combination with a tray frame provided with spaced trunnions projecting inwardly from its front and rear walls and axially aligned in pairs, egg receiving cages, each having notched end walls, and adapted to be supported within the tray frame when a pair of trunnions are engaged in the end wall notches, said notches having the form of open ended slots adapted to allow the cages to move downwardly to a point with their centers of gravity slightly below the level of the trunnions, and a slide removably mounted upon one wall of the tray frame and loosely engageable with the cages to tilt the same upon said trunnions, said slide having portions adapted to ride upon the ends of the cages into position for interlocking engagement therewith during cage tilting movements of the slide, whereby each of the cages is made independently removable.

4. An incubator egg tray comprising the combination with a tray frame provided with spaced trunnions projecting inwardly from its front and rear walls and axially aligned in pairs, egg receiving cages, each having notched end walls and adapted to be supported within the tray frame when said wall to tilt the same upon said trunnions, when the slide is actuated each cage being formed of sheet metal strips adapted to allow rows of eggs to become loosely wedged between them and between which strips air may circulate throughout the egg receiving space.

5. An incubator egg tray, comprising the combination with a tray frame having inwardly projecting pairs of trunnions, and egg supporting cages having end walls provided with open ended slots extending upwardly from the bottom margins of the end walls and adapted to receive said trunnions, said end walls being also formed with beveled margins and an intermediate notch for interlocking engagement with a slide actuator, and a slide actuator carried by the tray frame and formed to ride over said beveled margins and loosely interlock with the notched end walls of the cages, and to tilt the same about the axes of said trunnions.

6. An egg tray for incubators comprising the combination with a tray frame, of a series of elongated parallel egg cages, each adapted to loosely support two rows of eggs, each cage having a central bar downwardly pitched in opposite directions from a longitudinal center line in the lower portion of the cage, and side bars of sheet metal, arcuate in cross section, with lower portions convergent toward said central bar and co-operative therewith for supporting rows of eggs between them and the central bar, the space between the side and central bar portions being open and unobstructed, whereby eggs of differing sizes may each find its own anchorage between such convergent portions and be held with stability when the cage is laterally tilted.

7. An incubator egg tray, comprising the combination of a series of longitudinally elongated egg supporting cages having end walls provided with upwardly extending open ended trunnion receiving slots and downwardly extending open ended slide receiving notches.

8. An incubator egg tray, comprising the combination with a tray frame, of a series of elongated egg receiving cages having end walls provided with upwardly extending open ended trunnion receiving slots and downwardly extending open ended slots to receive an actuator, trunnions carried by the tray frame in positions for registry with the upwardly extending slots, and a slide car-

ried by the tray frame and provided with projections adapted to be engaged in said notches, whereby a movement of the slide will cause a tilting movement of each egg cage upon its supportiing trunnions, said slide being longitudinally channeled to receive one wall of the tray frame and having the outer wall of the channel provided with a coupling member adapted to be engaged by an operating rod.

9. In an incubator egg supporting and egg tilting mechanism, the combination of an egg tray frame provided with a series of parallel egg cages separately connected with the front and rear walls of the frame and independently removable therefrom, by mere manipulation, a slide carried by one of said frame walls and adapted for interlocking engagement with the egg trays, an actuating rod extending along the slide carrying wall of the tray frame and provided with a slide actuating arm, and an oscillatory coupling member carried by the slide in a position for interlocking engagement with said arm.

10. In an incubator egg supporting and egg tilting mechanism, the combination of an egg tray frame provided with a series of parallel egg cages separately connected with the front and rear walls of the frame and independently removable therefrom, a slide carried by one wall of said frame and adapted for interlocking engagement with the egg trays, an actuating rod extending along the slide carrying wall of the tray frame and provided with a slide actuating arm, and a yieldable coupling member carried by the slide and adapted to automatically engage said operating arm in one position of relative adjustment of the arm and slide.

11. An incubator egg supporting and egg tilting mechanism, comprising the combination of parallel egg supporting cages independently pivoted to the tray frame and independently removable therefrom, each egg supporting cage being adapted to receive two rows of eggs in parallel relation to each other and extending from points adjacent to the front and rear walls of the tray frame across the space between them, and an independently movable and removable slide mounted upon the upper margin of one tray wall and engageable with said cages to tilt

tilting slide mounted upon one wall of the frame and provided with interior projections for oscillating egg supports within the tray, an exterior coupling, and a slide actuator extending along one side of the tray and engageable with the coupling by axial movement, said coupling being automatically movable transversely of the slide actuator to engage the same.

14. An incubator egg tray having a series of independently removable egg cages supported for oscillation about longitudinal axial lines passing near their respective centers of gravity, and adapted to support substantially parallel rows of eggs, the bottoms of said cages being sufficiently open to permit candling operations and to allow eggs of differing sizes to find anchorage at the margins of the openings, whereby each egg may be supported in substantially fixed relation to the cage.

15. In an incubator egg tray, the combination with a tray frame and a set of separately removable egg receiving cages having upwardly convergent upper margins provided with means for engagement of an actuating slide therewith, of a slide associated with one wall of the tray frame and adapted to automatically engage an unconnected cage by movement along its upper margin to said means for permitting slide engagement.

16. In an incubator egg tray, the combination with a tray frame and a set of separately removable egg receiving cages, of a slide associated with one wall of the tray frame and adapted to automatically move transversely into engagement with unconnected cages when the latter are in position within the frame, a slide actuator movable along one side of the slide, and automatically acting coupling means movable transversely of the slide and its actuator for operatively connecting them with each other when the actuator is being moved independently of the slide.

17. An incubator egg tray having [illegible] front and rear walls in combination with a series of longitudinally elongated egg supporting cages, each having like end walls provided with upwardly extended, open ended trunnion receiving slots and downwardly extended, open ended slide receiving notches, a channel shaped slide adapted to be mounted upon either of said

the outer wall of the channel provided with a coupling member adapted to be engaged by an operating rod.

9. In an incubator egg supporting and egg tilting mechanism, the combination of an egg tray frame provided with a series of parallel egg cages separately connected with the front and rear walls of the frame and independently removable therefrom, by mere manipulation, a slide carried by one of said frame walls and adapted for interlocking engagement with the egg trays, an actuating rod extending along the slide carrying wall of the tray frame and provided with a slide actuating arm, and an oscillatory coupling member carried by the slide in a position for interlocking engagement with said arm.

10. In an incubator egg supporting and egg tilting mechanism, the combination of an egg tray frame provided with a series of parallel egg cages separately connected with the front and rear walls of the frame and independently removable therefrom, a slide carried by one wall of said frame and adapted for interlocking engagement with the egg trays, an actuating rod extending along the slide carrying wall of the tray frame and provided with a slide actuating arm, and a yieldable coupling member carried by the slide and adapted to automatically engage said operating arm in one position of relative adjustment of the arm and slide.

11. An incubator egg supporting and egg tilting mechanism, comprising the combination of parallel egg supporting cages independently pivoted to the tray frame and independently removable therefrom, each egg supporting cage being adapted to receive two rows of eggs in parallel relation to each other and extending from points adjacent to the front and rear walls of the tray frame across the space between them, and an independently movable and removable slide mounted upon the upper margin of one tray wall and engageable with said cages to tilt them upon their pivotal axes, said slide, when removed, permitting removal of individual cages.

12. In an incubator egg tray the combination with a tray frame, of a channeled egg tilting slide mounted upon and loosely embracing one wall of the frame, and egg supporting means engageable by said slide for tilting the eggs.

13. In an incubator egg tray the combination with a tray frame, of a channeled egg

cally movable transversely of the ... tuator to engage the same.

14. An incubator egg tray having a ... of independently removable egg cages ... ported for oscillation about longitudi... axial lines passing near their respective ... ters of gravity, and adapted to support ... stantially parallel rows of eggs, the bottoms ... of said cages being sufficiently open to permit candling operations and to allow eggs of differing sizes to find anchorage at the margins of the openings, whereby each egg may be supported in substantially fixed relation to the cage.

15. In an incubator egg tray, the combination with a tray frame and a set of separately removable egg receiving cages having upwardly convergent upper margins provided with means for engagement of an actuating slide therewith, of a slide associated with one wall of the tray frame and adapted to automatically engage an unconnected cage by movement along its upper margin to said means for permitting slide engagement.

16. In an incubator egg tray, the combination with a tray frame and a set of separately removable egg receiving cages, of a slide associated with one wall of the tray frame and adapted to automatically move transversely into engagement with unconnected cages when the latter are in position within the frame, a slide actuator movable along one side of the slide, and automatically acting coupling means movable transversely of the slide and its actuator for operatively connecting them with each other when the actuator is being moved independently of the slide.

17. An incubator egg tray having ... front and rear walls in combination with a series of longitudinally elongated egg ... porting cages, each having like end ... provided with upwardly extended, ... ended trunnion receiving slots and ... wardly extended, open ended slide receiving notches, a channel shaped slide adapted to be mounted upon either of said walls and to receive such wall in its channel, said slide having projections adapted to engage in the downwardly extending slots of the respective cages at either end thereof, and the outer wall of the slide channel being provided with means for coupling it to a slide actuator.

18. An incubator egg tray having ... front and rear walls in combination with a series of longitudinally elongated egg ... porting cages, each having like end ...

provided with upwardly extended, open trunnion receiving slots and downwardly extended, open ended slide receiving notches, a channel shaped slide adapted to be mounted upon either of said walls and to receive such wall in its channel, said slide having projections adapted to engage in the downwardly extending slots of the respective cages at either end thereof, and the outer wall of the slide channel being provided with means for coupling it to a slide actuator, each end wall of each cage being also provided with inclined margins along which the slide projection may move to a position of engagement in the downwardly extending slot for automatically coupling the slide to the cage when the slide is reciprocated by its actuator.

19. In an egg tray, a series of tiltable egg supporting cages, in combination with a slide mounted upon one wall of the tray and having portions extending downwardly along one side of the wall for engagement with the cages and another portion extending downwardly along the other side of the wall for engagement with an actuator.

20. In an egg tray, a series of tiltable egg supporting cages, in combination with a slide mounted upon one wall of the tray and having portions extending downwardly along one side of the wall for engagement with the cages and another portion extending downwardly along the other side of the wall for engagement with an actuator, said last mentioned portion having its lower margin provided with an outwardly and upwardly projecting flange, and a gravity actuated coupling member loosely interlocked with said flange and adapted to be tilted and allowed to drop into interlocking engagement with a slide actuator movable in a path normally occupied by portions of said coupling members.

21. An egg supporting cage for incubator trays, comprising the combination with end walls, of side and bottom members for said walls connecting the end walls and adapted to support parallel rows of eggs in spaced relation to each other, the bottom member comprising upwardly convergent walls having lower margins spaced from the side walls to provide open bottoms into which various size eggs can seat in substantially fixed relation.

22. An egg tray provided with parallel cage having its bottom formed of upwardly divergent egg supporting walls to engage and support eggs of various sizes at opposite points, said walls being laterally spaced apart to provide an unobstructed open bottom into which eggs of various sizes can project to find secure anchorage upon said divergent walls against lateral shifting.

GEORGE T. MARKEY.

wall of the slide channel being pro-
with means for coupling it to a slide
ator, each end wall of each cage being
provided with inclined margins along
h the slide projection may move to a
ion of engagement in the downwardly
ding slot for automatically coupling
slide to the cage when the slide is recip-
ated by its actuator.

19. In an egg tray, a series of tiltable egg supporting cages, in combination with a slide mounted upon one wall of the tray and having portions extending downwardly along one side of the wall for engagement with the cages and another portion extending downwardly along the other side of the wall for engagement with an actuator.

20. In an egg tray, a series of tiltable egg supporting cages, in combination with a slide mounted upon one wall of the tray and having portions extending downwardly along one side of the wall for engagement with the cages and another portion extending downwardly along the other side of the wall for engagement with an actuator, said last mentioned portion having its lower margin provided with an outwardly and upwardly projecting flange, and a gravity actuated coupling member loosely interlocked with said flange and adapted to be lifted and allowed to drop into interlocking engagement with a slide actuator movable along a path normally occupied by portions of the coupling members.

21. An egg supporting cage for incubators, comprising the combination with end walls, of side and bottom members for said walls connecting the end walls and adapted to hold parallel rows of eggs in spaced relation to each other, the bottom member comprising upwardly convergent walls having their lower margins spaced from the side walls to provide open bottoms into which various size eggs can seat in substantially fixed relation.

egg tray provided with parallel
provided with means for sup-
rows of eggs and each having
supporting bottom formed of up-
gent egg supporting walls, said
walls forming the sole support
various sizes to prevent lateral
the eggs.

egg tray, an egg cage adapted
parallel rows of eggs in posi-
ate candling operations, each

Dec. 22, 1931. G. T. MARKEY 1,837,458

AIR MIXER AND CIRCULATOR

Filed Oct. 6, 1928

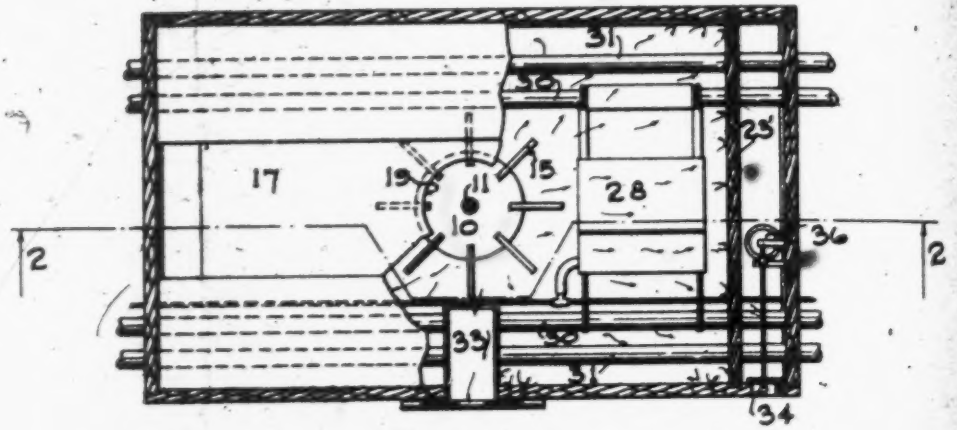


FIG. 1

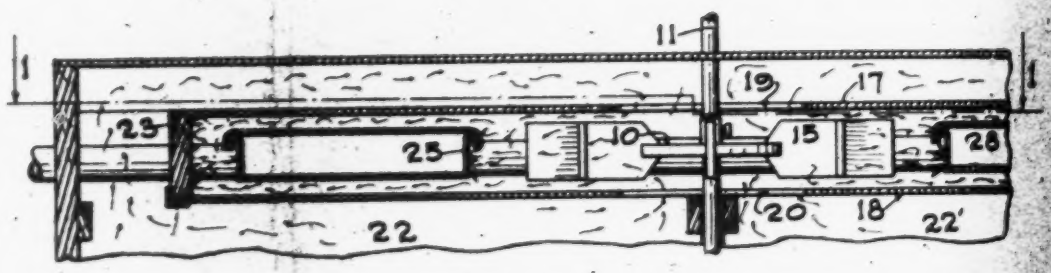
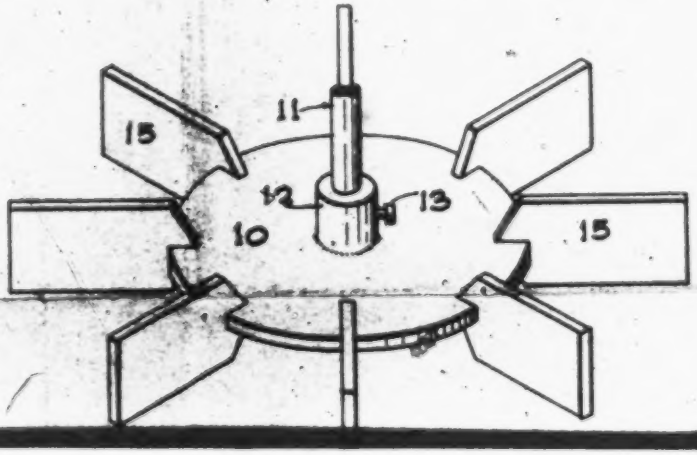


FIG. 2



Filed Oct. 6, 1928

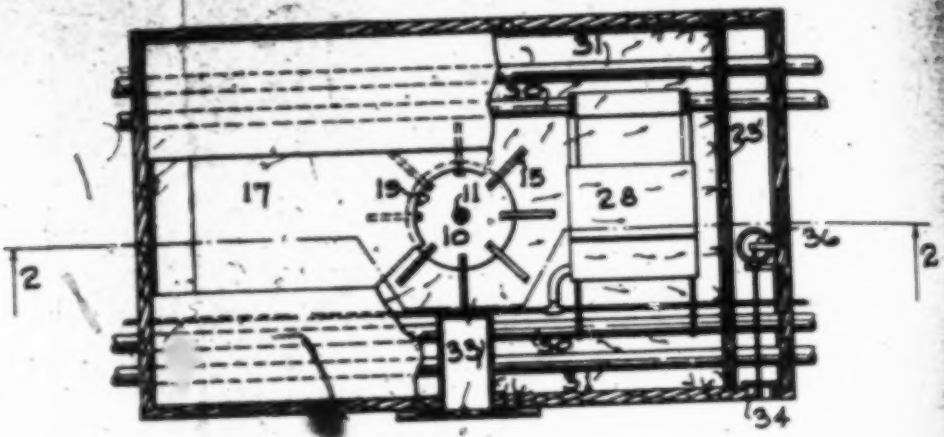


FIG. 1

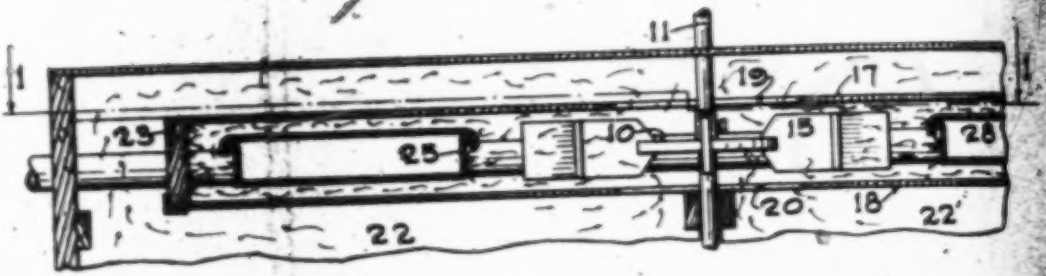


FIG. 2

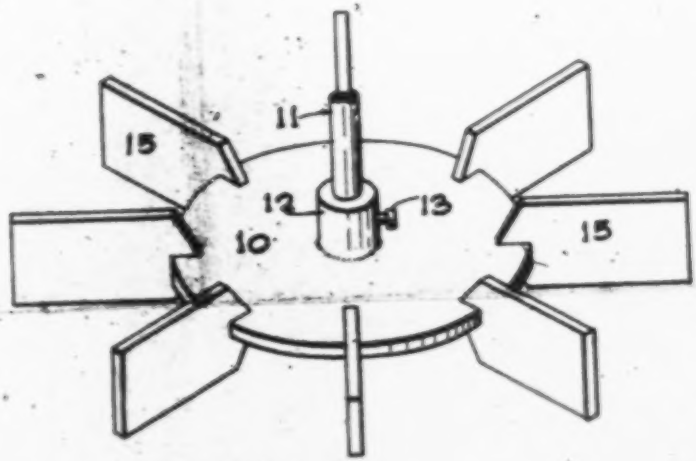


FIG. 3.

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UNITED STATES PATENT OFFICE

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AIR MIXER AND CIRCULATOR

Application filed October 6, 1928. Serial No. 310,280.

This invention relates to improvements in air mixers and circulators designed for use in homogenizing and circulating air in incubators and in general for churning and mixing air and gases.

Objects of this invention are to equalize the temperatures in a circulatory system, mix fresh air or gas with that which is being recirculated, maintain a uniform degree of purity in the system and vitalize air in such system by churning it and keeping it in motion.

It is also an object of this invention to provide means whereby air or gases derived from different sources of supply or from different portions of the same source of supply may be separately received and acted upon by the movable element of the churning device in such a manner that the air or gas from each source of supply will be mixed with that from the other source or sources to produce a homogeneous product.

A further object of this invention is to provide means, associated with the churning device, for delivering a predetermined percentage of the mixed product out of the system and replacing the quantity so delivered from an exterior source of supply while circulating and rechurning the remainder, and maintaining the circulating fluid uniformly in a constant condition as to temperature and purity.

In the drawings:

Figure 1 is a plan view (partly in horizontal section on line 1—1 of Figure 2) of an air mixer and circulator embodying my invention, showing the same as employed for [illegible] incubator.

means of the hub 12 and set screw 13. The outer margin of the plate or disk is provided with a series of radially projecting wings 15 similar to those of an ordinary centrifugal fan but preferably located in radial planes and having flat plane surfaces instead of being curved as is common in the construction of centrifugal fans.

It will be observed, however, that the wings 15 have their upper margins at a substantial distance above the plate or disk 10 and their lower margins at a substantial distance below it. In the construction shown, the portions above the disk are substantially equal in area to the portions below it, whereby, when the disk is rotated, air will be driven from space above and below the disk outwardly by centrifugal force in planes substantially parallel to that of the disk.

The disk is rotated between the two parallel walls 17 and 18, each of which is apertured to provide air inlet openings 19 and 20 respectively to admit air to space on opposite sides of the disk along the axis of the impeller formed by the disk and its radially projecting wings 15. The air reaching the impeller through the aperture 19 may come from a different source of supply from that reaching the impeller through the aperture 20. On the other hand it may come from different portions of the same space or chamber. For example, in the construction as shown in Figure 2, air from the space 22 may pass to the left around an end wall or baffle 23 connecting the walls 17 and 18 and this air may then pass inwardly toward the shaft 11 and downwardly through the opening 19, whereas air from the inner portion of

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AIR MIXER AND CIRCULATOR

Application filed October 6, 1922. Serial No. 593,660.

This invention relates to improvements in air mixers and circulators designed for use in homogenizing and circulating air in incubators and in general for churning and mixing air and gases.

Objects of this invention are to equalize the temperatures in a circulatory system, mix fresh air or gas with that which is being recirculated, maintain a uniform degree of purity in the system and vitalize air in such system by churning it and keeping it in motion.

It is also an object of this invention to provide means whereby air or gases derived from different sources of supply or from different portions of the same source of supply may be separately received and acted upon by the movable element of the churning device in such a manner that the air or gas from each source of supply will be mixed with that from the other source or sources to produce a homogeneous product.

A further object of this invention is to provide means, associated with the churning device, for delivering a predetermined percentage of the mixed product out of the system and replacing the quantity so delivered from an exterior source of supply while circulating and rechurning the remainder, and maintaining the circulating fluid uniformly in a constant condition as to temperature and purity.

In the drawings:

Figure 1 is a plan view (partly in horizontal section on line 1—1 of Figure 2) of an air mixer and circulator embodying my invention, showing the same as employed for circulating air in an incubator.

Figure 2 is a view of the same in vertical section drawn generally to line 2—2 of Figure 1.

Figure 3 is an isometric view of the rotary member.

Like parts are identified by the same reference characters throughout the several views.

A plate or disk 10 is secured to a shaft 11 which may be rotated from any suitable source of power. In the construction shown, the plate or disk is secured to the shaft by means of the hub 12 and set screw 13. The outer margin of the plate or disk is provided with a series of radially projecting wings 15 similar to those of an ordinary centrifugal fan but preferably located in radial planes and having flat plane surfaces instead of being curved as is common in the construction of centrifugal fans.

It will be observed, however, that the wings 15 have their upper margins at a substantial distance above the plate or disk 10 and their lower margins at a substantial distance below it. In the construction shown, the portions above the disk are substantially equal in area to the portions below it, whereby, when the disk is rotated, air will be driven from space above and below the disk outwardly by centrifugal force in planes substantially parallel to that of the disk.

The disk is rotated between the two parallel walls 17 and 18, each of which is apertured to provide air inlet openings 19 and 20 respectively to admit air to space on opposite sides of the disk along the axis of the impeller formed by the disk and its radially projecting wings 15. The air reaching the impeller through the aperture 19 may come from a different source of supply from that reaching the impeller through the aperture 20. On the other hand it may come from different portions of the same space or chamber. For example, in the construction as shown in Figure 2, air from the space 22 may pass to the left around an end wall or baffle 23 connecting the walls 17 and 18 and this air may then pass inwardly toward the shaft 11 and downwardly through the opening 19, whereas air from the inner portion of the space 22 may flow to the right toward the shaft 11 and upwardly toward the aperture 20 to the underside of the disk 10.

Both currents of air will be driven outwardly from the respective sides of the disk and upon striking any wall or baffle will be thoroughly intermingled, reversed, churned and distributed. For example, a portion of the air driven to the left in Figure 2 will strike the wall 25 of a pan or other receptacle and some of it will be diverted upwardly some downwardly and some later-

ally. Some will rebound in the direction of the impeller. Other portions are driven around the chamber of which the wall 25 is a part and continue until such portions strike the baffle wall 23 whereupon a similar eddying and churning result will be obtained. It may be assumed that the chamber of which the wall 25 is a part is similar to the chamber 28 illustrated at the right hand in Figure 1 and that the wall 23′ is similar to the wall 23 shown at the left in Figure 2.

It may be assumed that the space between the walls 17 and 18 is for outlets commensurate with the capacity of the inlet apertures 19 and 20. If there are no side walls between the baffle walls 23 and 23′ the air will, of course, be free to escape laterally and in the construction shown in Figure 1 this air may be driven across pipes 30 and 31 and downwardly in the space between these pipes from which it may eventually find its way back to the space 22 or 22′ illustrated in Figure 2, thereby establishing a circulatory system.

Some of the air may be driven out to the exterior through a laterally extending passage 33 and fresh air may be admitted to the system through a valved passage indicated at 34. In the construction shown, the valve at 34 is controlled by a thermostat 36 whereby the quantity of fresh air admitted may be controlled in accordance with the temperature of the air in the circulatory system. The employment of thermostatic control and the question as to whether fresh air or gas is to be admitted to the system in proportion to another quantity that is being expelled will, of course, depend in each case on the purpose of the system and the character of the fluid that is being handled. These features, including the pipes 30 and 31 and the chambers 28, form no part of the invention herein claimed but are adapted to be used in connection with an incubator described and claimed in my companion application, Serial No. 282,302, filed June 2, 1928 for a heating system for incubators.

They are referred to in this application [illegible] illustration of one manner in which my improved air mixing and circulating may be employed for obtaining homogeneous conditions in a

in another portion due to the presence of greater number of deflecting or obstructing objects and in either of the instances referred to the circulation tends to be unbalanced in both velocity and temperature. Insofar as the unbalanced condition for any given quantity of the circulating fluid exists during only one traverse of the system the injury may be slight, whereas, if allowed to accentuate by repetition, widely varying conditions of temperature, ventilation or other unequal effects may result. By employing a positively driven mixer and air circulator of the type herein disclosed high velocities may be checked, low velocities accelerated, temperatures equalized and uniform conditions otherwise maintained.

I claim:

1. An air mixing and circulating device comprising a generally rectangular chamber having substantially parallel walls provided with inlet apertures, an impeller driving shaft in a line substantially coinciding with the centers of said apertures and provided with a disk substantially parallel to said walls and provided with impeller wings extending on both sides of the plane of the disk, said chamber having baffles on two sides of the impeller wings disposed tangentially to circles concentric with the disk and arranged to break up the air currents generated by the wings and commingle the air coming from above the disk with that coming from below it, said walls having openings along the sides not occupied by the baffles adapted to allow delivery of the churning air from said chamber.

2. An air mixing and circulating device comprising a generally rectangular chamber having substantially parallel walls provided with inlet apertures, an impeller driving shaft in a line substantially coinciding with the centers of said apertures and provided with a disk substantially parallel to said walls and provided with impeller wings extending on both sides of the plane of the disk, said chamber having baffles on two sides of the impeller wings disposed tangentially to circles concentric with the disk and arranged to break up the air currents generated by the wings and commingle the air coming from above the disk with that coming

the wall 25 is a part is similar to the chamber 28 illustrated at the right hand in Figure 1 and that the wall 23′ is similar to the wall 23 shown at the left in Figure 2.

It may be assumed that the space between the walls 17 and 18 is for outlets commensurate with the capacity of the inlet apertures 19 and 20. If there are no side walls between the baffle walls 23 and 23′ the air will, of course, be free to escape laterally and in the construction shown in Figure 1 this air may be driven across pipes 30 and 31 and downwardly in the space between these pipes from which it may eventually find its way back to the space 22 or 22′ illustrated in Figure 2, thereby establishing a circulatory system.

Some of the air may be driven out to the exterior through a laterally extending passage 33 and fresh air may be admitted to the system through a valved passage indicated at 34. In the construction shown, the valve at 34 is controlled by a thermostat 36 whereby the quantity of fresh air admitted may be controlled in accordance with the temperature of the air in the circulatory system. The employment of thermostatic control and the question as to whether fresh air or gas is to be admitted to the system in proportion to another quantity that is being expelled will, of course, depend in each case on the purpose of the system and the character of the fluid that is being handled. These features, including the pipes 30 and 31 and the chambers 28, form no part of the invention herein claimed but are adapted to be used in connection with an incubator described and claimed in my companion application, Serial No. 282,802, filed June 2, 1928 for a heating system for incubators.

They are referred to in this application for the purpose of explanation and illustration of one manner in which my improved air mixer and circulator may be employed for obtaining homogeneous conditions in a circulatory system which would otherwise show a constant tendency to become unbalanced as to temperature, rate of circulation in different portions of the system and in atmospheric purity. In the circulation of air through chambers having some walls exposed for heat radiation and other portions subject to little loss of heat the tendency is for the warmer air to rise in the portions where the heat loss is smallest and to descend in portions where the temperatures are lowest. Also in other systems the resistance may be greater in one portion of a chamber than during only one traverse of the sy... injury may be slight, whereas, if allo... accentuate by repetition, widely ... conditions of temperature, ventilat... other unequal effects may result. By e... ing a positively driven mixer and air ... lator of the type herein disclosed hig... locities may be checked, low velocities ... erated, temperatures equalized and uni... conditions otherwise maintained.

I claim:

1. An air mixing and circulating de... comprising a generally rectangular cha... having substantially parallel walls pro... with inlet apertures, an impeller driv... shaft in a line substantially coinciding ... the centers of said apertures and pro... with a disk substantially parallel to said wa... and provided with impeller wings exte... on both sides of the plane of the disk, sa... chamber having baffles on two sides of the impeller wings disposed tangentially to ci... cles concentric with the disk and arranged t... break up the air currents generated by the wings and commingle the air coming fro... above the disk with that coming from belo... it, said walls having openings along the sid... not occupied by the baffles adapted to allo... delivery of the churning air from said cha... ber.

2. An air mixing and circulating de... comprising a generally rectangular cha... having substantially parallel walls pro... with inlet apertures, an impeller driv... shaft in a line substantially coinciding ... the centers of said apertures and pro... with a disk substantially parallel to sa... walls and provided with impeller wings ex... tending on both sides of the plane of the dis... said chamber having baffles on two sides ... the impeller wings disposed tangentially to circles concentric with the disk and ar... to break up the air currents generated ... wings and commingle the air comi... above the disk with that coming fro... it, said wall having openings along ... not occupied by the baffles, adapted ... delivery of the churning air from sa... ber, and additional walls spaced ... walls of said chamber across the p... delivered air and adapted to dir... in planes transverse to that in wh... peller revolves.

3. An air mixing and circula... comprising a chamber having ... parallel walls oppositely apert... ginally unconnected along two ... vide slot-like outlets, a rotary

cated between the inlet apertures and revoluble in a central plane substantially parallel to said walls, and a set of current interrupting eddy producing baffles located at a substantial distance from the impeller on two sides of its axis and across the space between the ends of the outlets, said baffles and the first mentioned walls forming a mixing chamber of a generally rectangular form.

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chamber of a generally rectangular form.

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Dec. 19, 1933. G. T. MARKEY 1,939,908

HEATING SYSTEM FOR INCUBATORS

Filed June 2, 1928 4 Sheets-Sheet 1

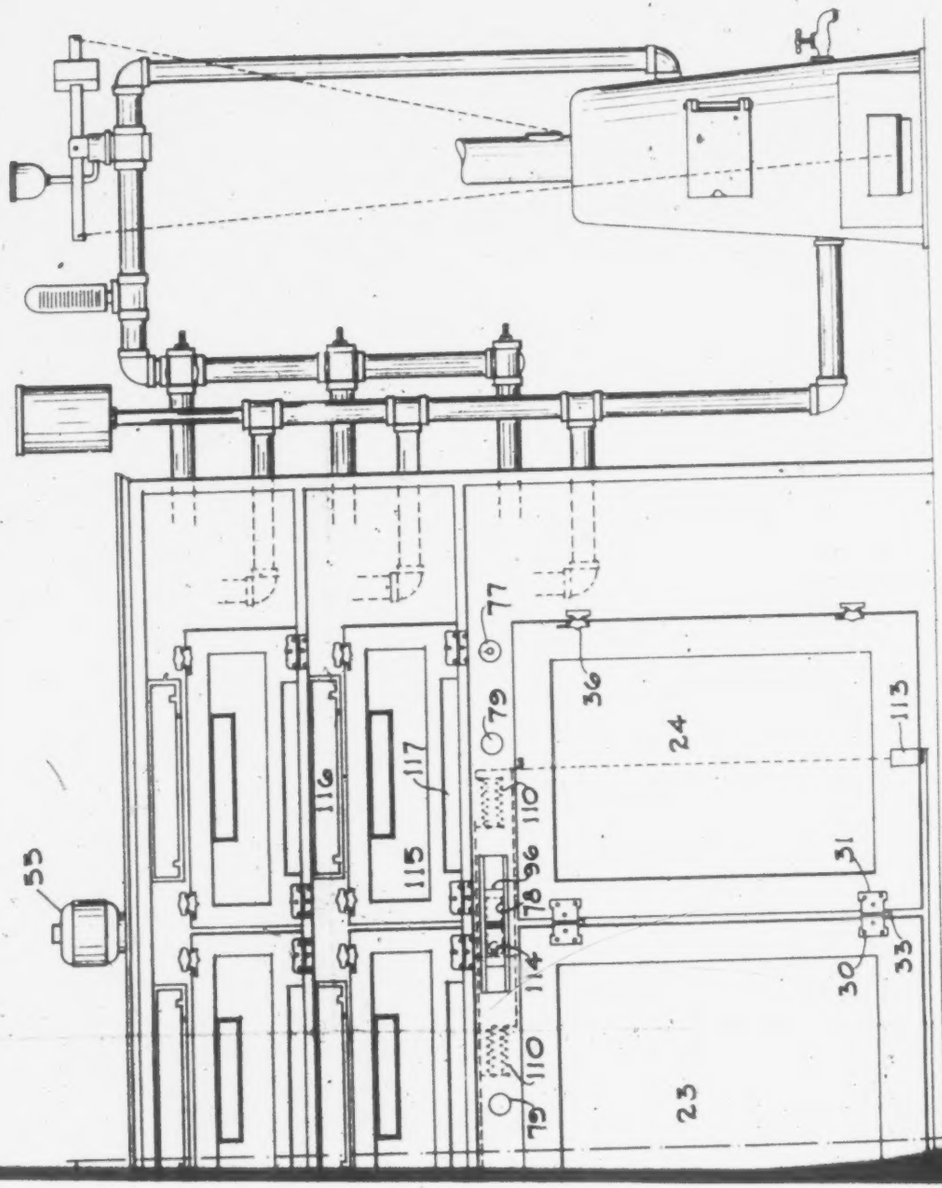

FIG. 1

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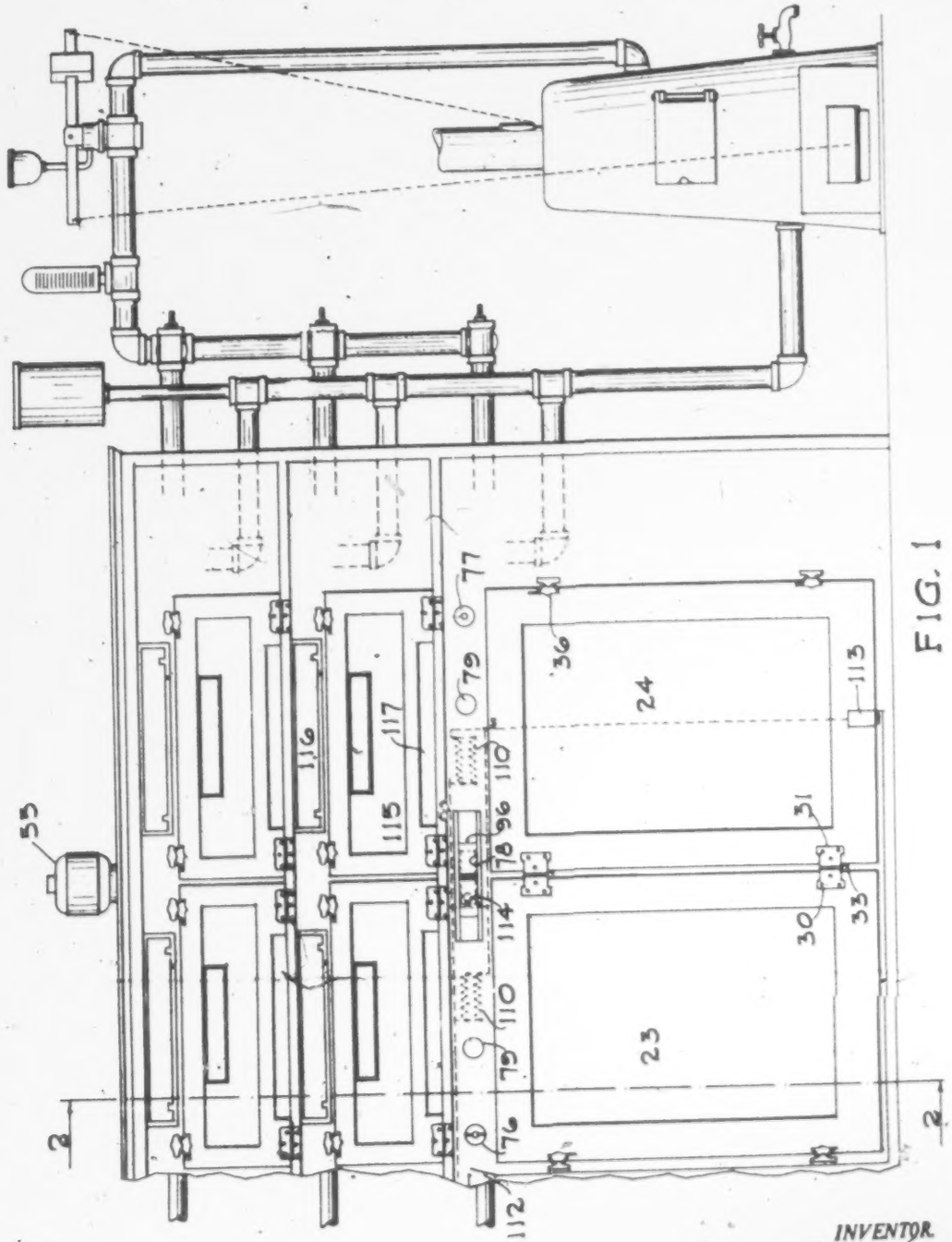

FIG. 1

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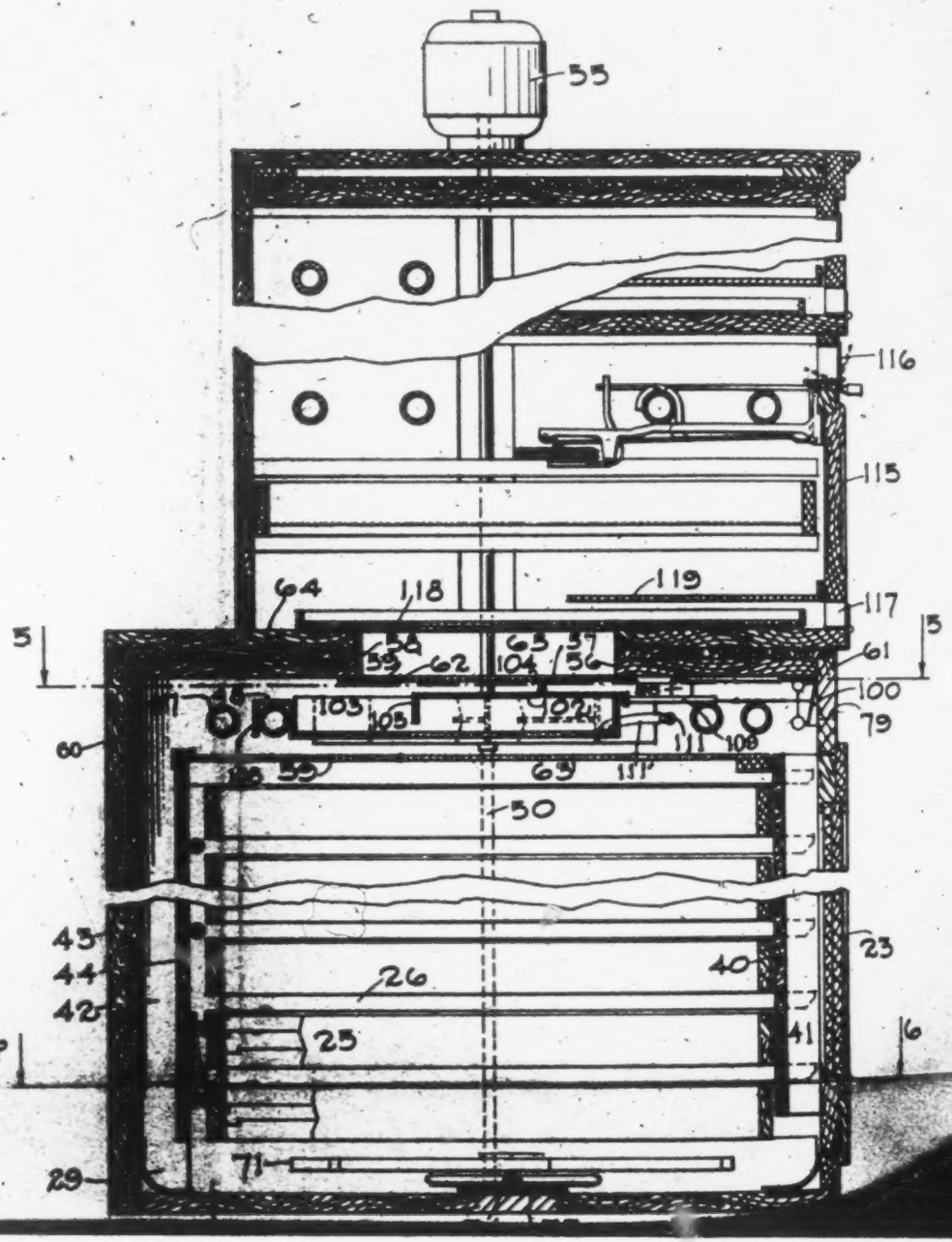
Dec. 19, 1933. G. T. MARKEY 1,939,908

HEATING SYSTEM FOR INCUBATORS

Filed June 2, 1928 4 Sheets-Sheet 2



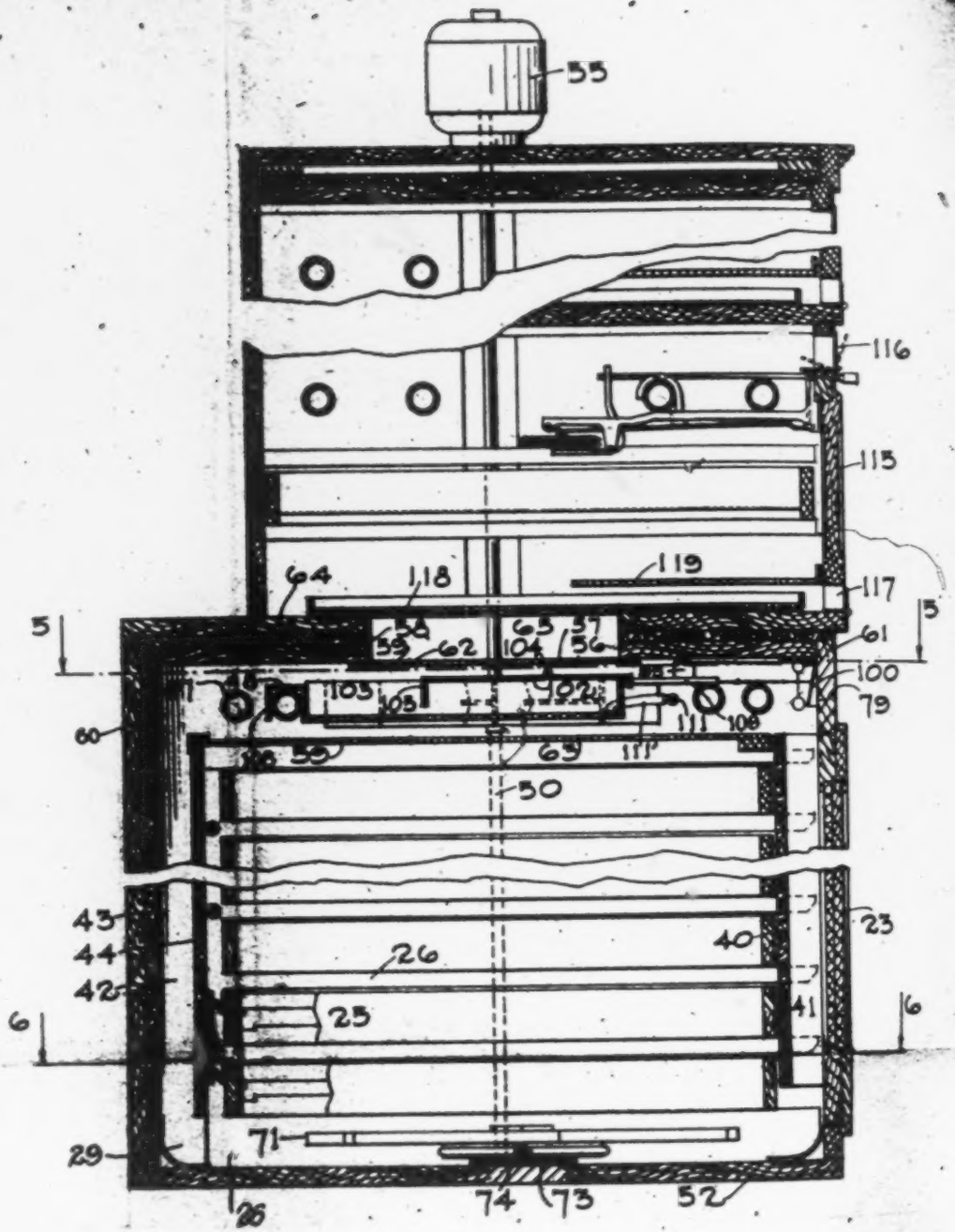


FIG. 2.

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Dec. 19, 1933. G. T. MARKEY 1,939,908

HEATING SYSTEM FOR INCUBATORS

Filed June 2, 1928 4 Sheets-Sheet 3

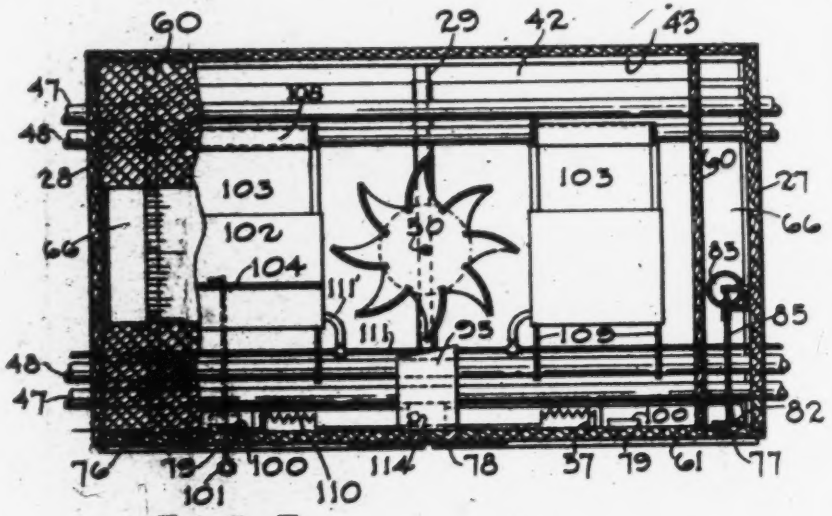
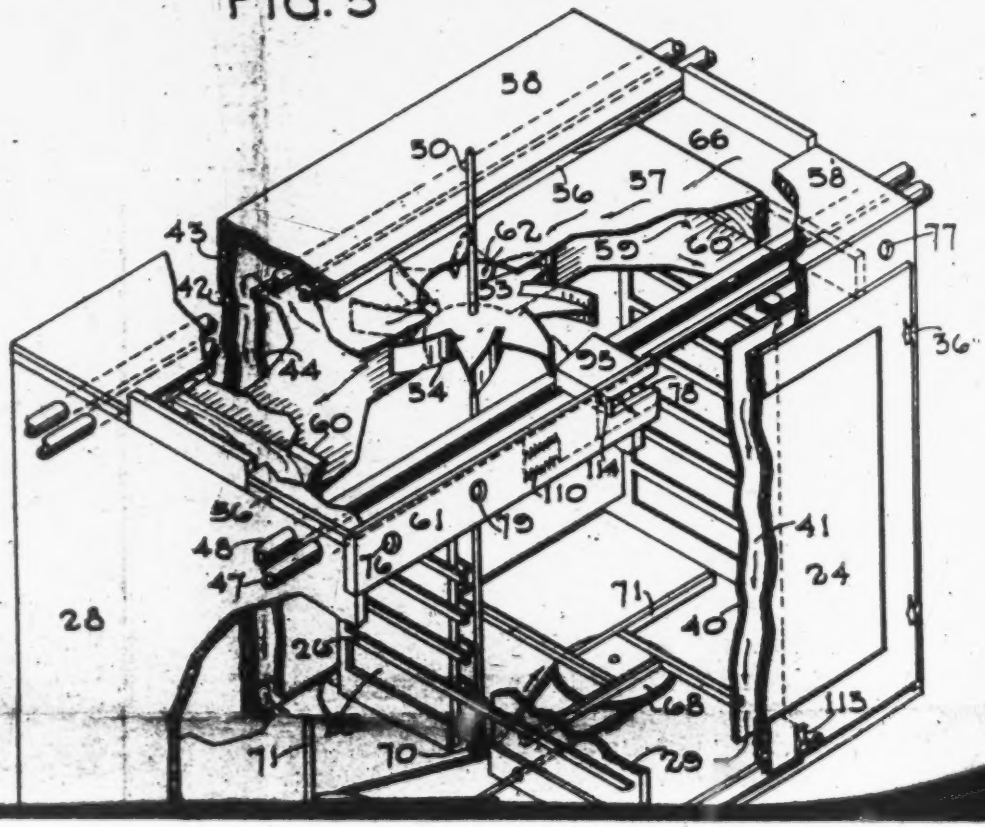


FIG. 5



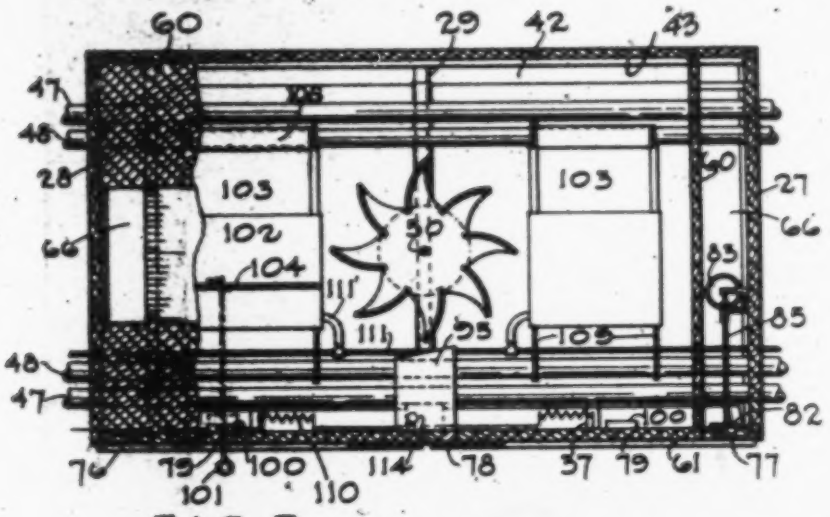


FIG. 5

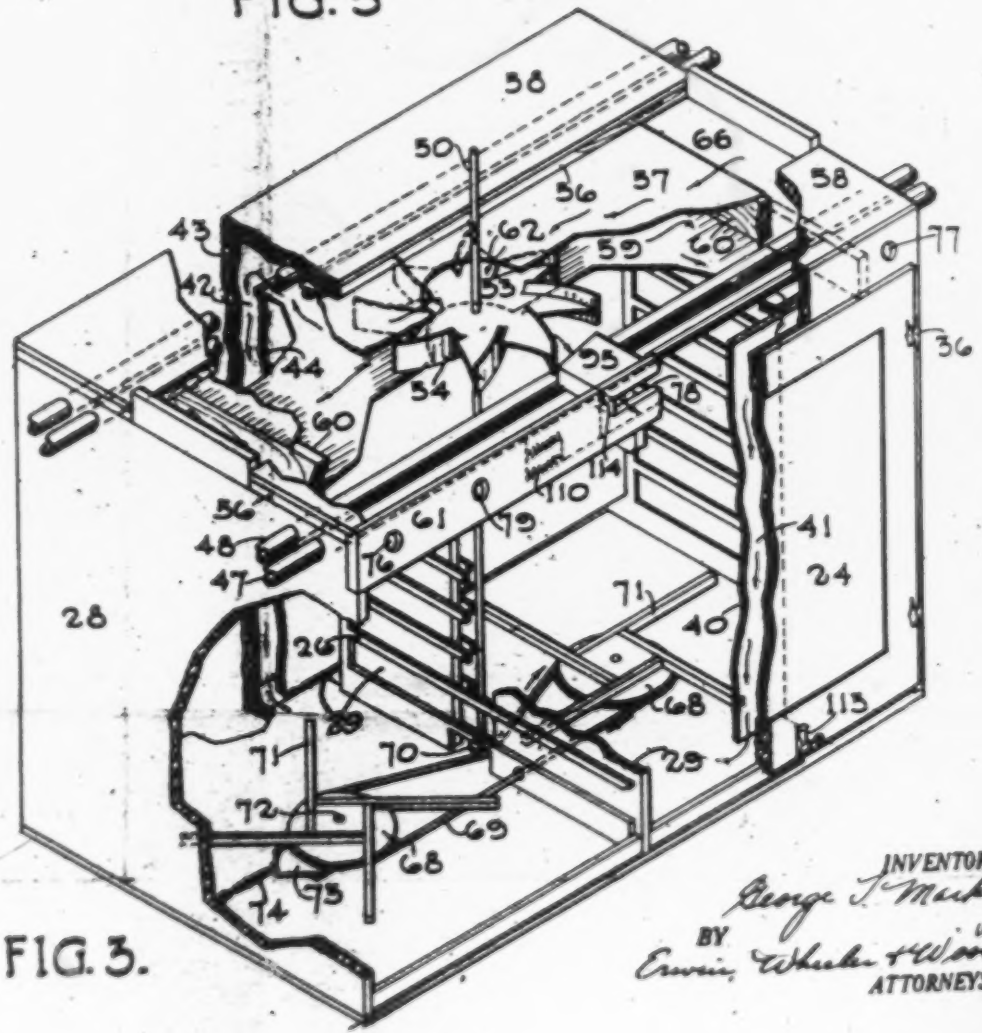


FIG. 3.

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Dec. 19, 1933. G. T. MARKEY 1,939,908

HEATING SYSTEM FOR INCUBATORS

Filed June 2, 1928 4 Sheets-Sheet 4

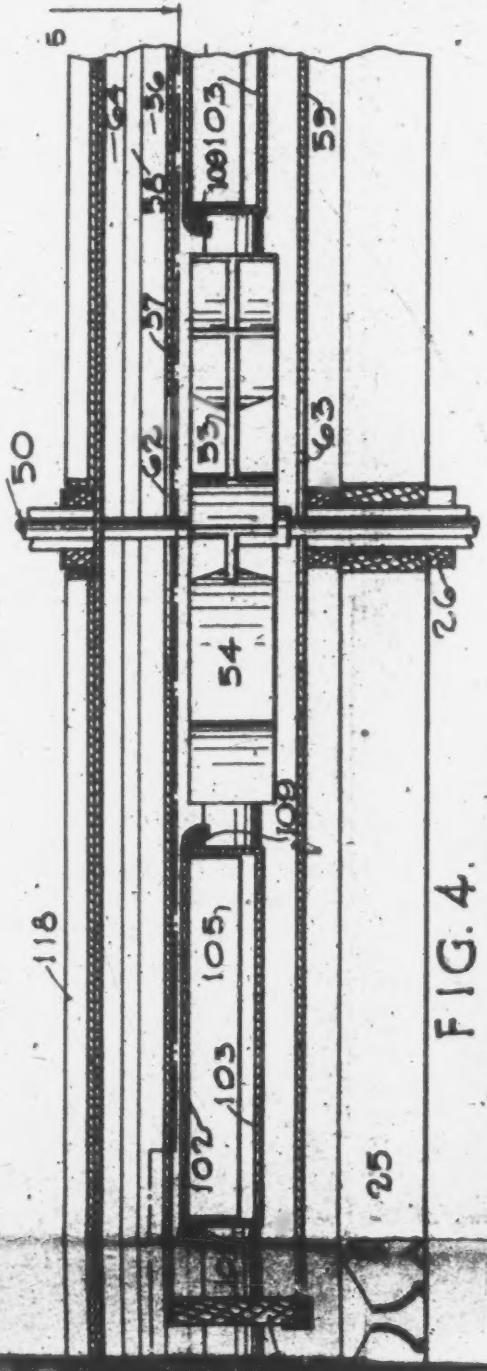


FIG. 4.

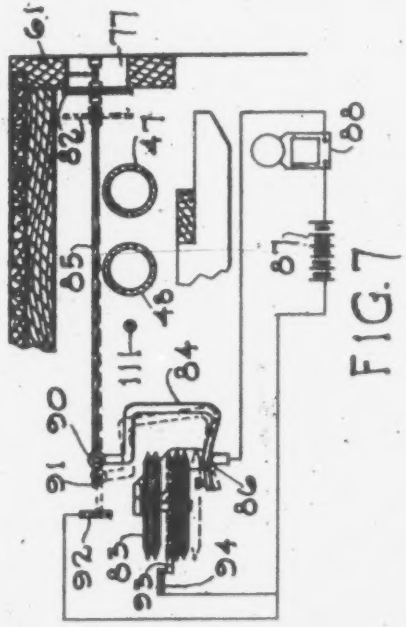


FIG. 7

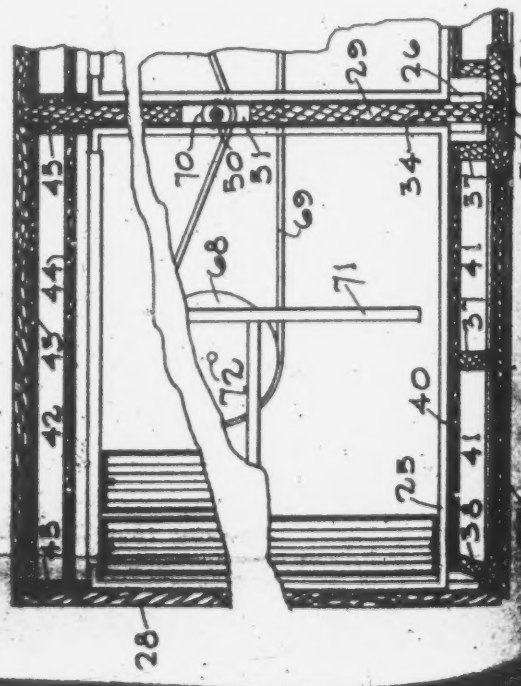


FIG. 6

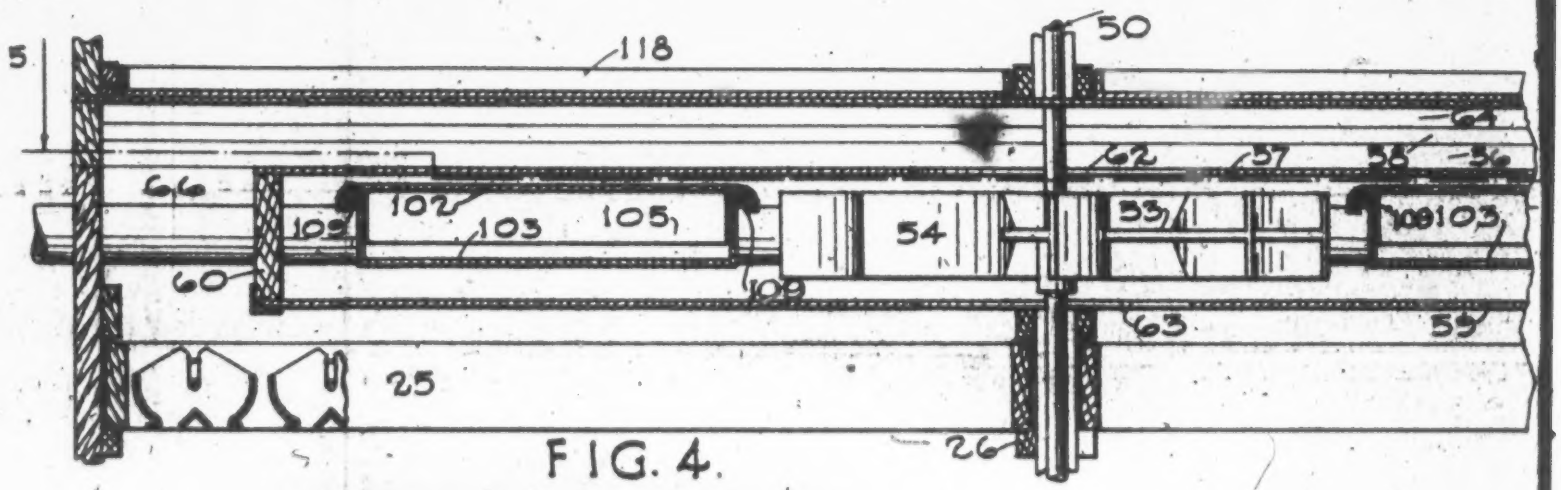


FIG. 4.

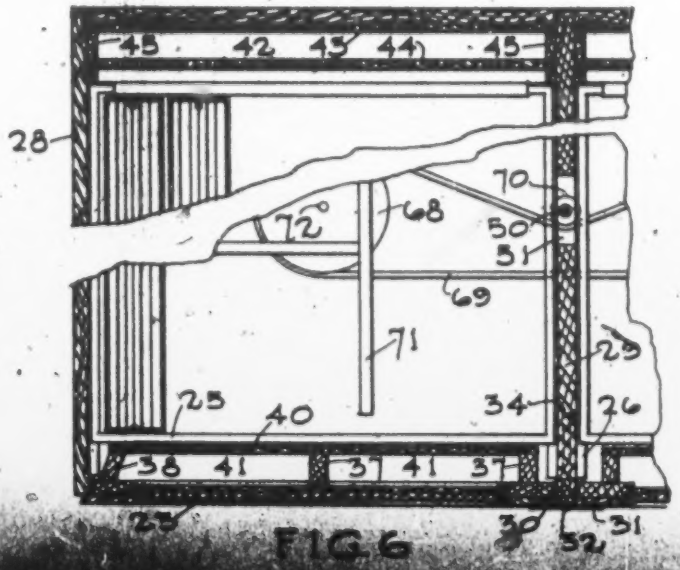


FIG. 6

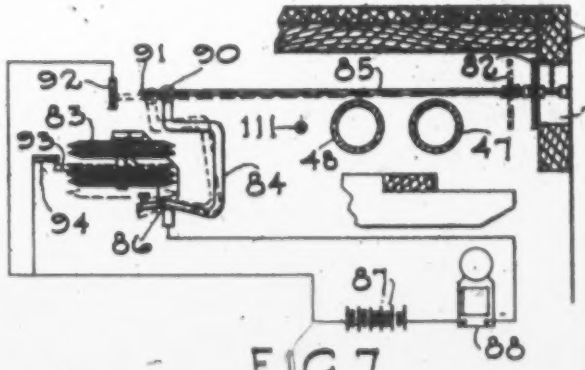


FIG. 7

INVENTOR
BY
ATTORNEYS

Patented Dec. 19, 1933 1,939,968

UNITED STATES PATENT OFFICE

1,939,968

HEATING SYSTEM FOR INCUBATORS

George T. Markey, Fort Atkinson, Wis., assignor to James Manufacturing Company, Fort Atkinson, Wis., a corporation of Wisconsin

Application June 2, 1932. Serial No. 615,393

14 Claims. (Cl. 119—35)

This invention relates to improvements in heating systems for incubators of the general type in which power driven means are employed to promote air mixing, primarily for heating, heat distributing purposes and for air vitalization by mixing, ventilation being accomplished by introduction of fresh air at different points in the incubator chamber to facilitate the mixing of the air, the distribution of heat and the control of heat and moisture.

The primary object of this invention is to provide adequate means for maintaining a correct temperature and moisture conditions uniformly in all portions of the incubator.

It is my object to provide means for churning the air and, at the same time, causing a vacuum in the top of a stack of egg trays, delivering the churned air over humidifying means for controlling its humidity and reducing its temperature, restoring its temperature, introducing fresh air into the churned air, evacuating a portion of the air that has once passed over the eggs and returning the remainder of the air thus humidified, heated and churned to where it can be again churned, mixed and diffused, preferably in combination with incoming air, and then allowed to [illegible] gently between diffusing supports of numerous eggs by convection and also due to the creation of a vacuum at the top of the eggs due to the churning of the air in a separated space above the eggs thereby avoiding drafts, hot and cold spots and forced circulation of air which would move the air so rapidly that it would be unable properly treat the eggs.

It is my object to avoid previous mistakes in the prior art of using forced draft machines in which large quantities of air are taken in and changed every few minutes.

More specifically stated my objects are:—to provide major heat supplying means with auxiliary intermittently and independently operable means sensitive to control than the

which the aforesaid results may be accomplished with due regard for compactness and maximum egg receiving capacity in proportion to the size of the structure.

Further objects are to provide improved means for mechanically promoting air mixing in aid of uniform heating, vitalization, and uniform admission and distribution of fresh air without radical change of temperature in any egg tray receiving portion of the incubator; to provide adequate means for according different treatment of eggs in advanced stages of incubation from that accorded to the eggs in the primary stages of incubation, with particular reference to the heating requirements; to utilize the moving air of a power driven air mixing system for an effective insulation of eggs from external temperature conditions during the earlier stages of their incubation; to provide improved power driven means for mixing and directing the course of the heat carrying and distributing air currents within an incubator; to provide co-operating means distant from the mixing means for thoroughly mixing all portions of the air and obtaining absolute uniformity in its temperature preparatory to its flow over the surfaces of the eggs; to provide improved means for controlling the fresh air inlet apertures, whereby the admission of such air is, in part, made intermittent and subject to temperature conditions within the incubator to accomplish the double purpose of ventilation and heat control or limitation. The method disclosed in this application is claimed in copending application, Serial No. 664,795, filed April 6, 1933. Reference is made to Patent No. 1,837,458, issued December 22, 1931, to George T. Markey, which claims certain subject matter disclosed herein.

In the drawings:

Figure 1 is a front elevation of an incubator unit embodying the invention herein claimed, the heating pipes and a wall fragment being ex-

HEATING SYSTEM FOR INCUBATORS

George T. Marksy, Fort Atkinson, Wis., assignor to James Manufacturing Company, Fort Atkinson, Wis., a corporation of Wisconsin

Application June 2, 1933. Serial No. 673,283

14 Claims. (Cl. 119—35)

This invention relates to improvements in heating systems for incubators of the general type in which power driven means are employed to promote air mixing, primarily for heating, heat distributing purposes and for air vitalization by mixing, ventilation being accomplished by introduction of fresh air at different points in the incubator chamber to facilitate the mixing of the air, the distribution of heat and the control of heat and moisture.

The primary object of this invention is to provide adequate means for maintaining a correct temperature and moisture conditions uniformly in all portions of the incubator.

It is my object to provide means for churning the air and, at the same time, causing a vacuum in the top of a stack of egg trays, delivering the churned air over humidifying means for controlling its humidity and reducing its temperature, restoring its temperature, introducing fresh air into the churned air, evacuating a portion of the air that has once passed over the eggs and returning the remainder of the air thus humidified, heated and churned to where it can be again churned, mixed and diffused, preferably in combination with incoming air, and then allowed to rise gently between diffusing supports of numerous eggs by convection and also due to the creating of a vacum at the top of the eggs due to the churning of the air in a separated space above the eggs thereby avoiding drafts, hot and cold spots and forced circulation of air which would move the air so rapidly that it would be unable to suitably treat the eggs.

It is my object to avoid previous mistakes in the prior art of using forced draft machines in which large quantities of air are taken in and discharged every few minutes.

More specifically stated my objects are:—to provide major heat supplying means with auxiliary intermittently and independently operable heating means more sensitive to control than the major heating means, the latter being preferably designed to operate within a range below maximum permissible temperatures; to utilise the auxiliary heating means for operating a signal in case of extreme emergency; to provide for moving heat distributing air currents over all of the heat radiating surfaces in such a manner as to keep such surfaces, and the air in contact therewith, from becoming overheated and deviating; to provide improved means for mixing and maintaining the circulating air in a uniform condition of temperature, humidity and purity; and to provide an incubator structure in which the aforesaid results may be accomplished with due regard for compactness and maximum egg receiving capacity in proportion to the size of the structure.

Further objects are to provide improved means for mechanically promoting air mixing in aid of uniform heating, vitalization, and uniform admission and distribution of fresh air without radical change of temperature in any egg tray receiving portion of the incubator; to provide adequate means for according different treatment of eggs in advanced stages of incubation from that accorded to the eggs in the primary stages of incubation, with particular reference to the heating requirements; to utilise the moving air of a power driven air mixing system for an effective insulation of eggs from external temperature conditions during the earlier stages of their incubation; to provide improved power driven means for mixing and directing the course of the heat carrying and distributing air currents within an incubator; to provide co-operating means distant from the mixing means for thoroughly mixing all portions of the air and obtaining absolute uniformity in its temperature preparatory to its flow over the surfaces of the eggs; to provide improved means for controlling the fresh air inlet apertures, whereby the admission of such air is, in part, made intermittent and subject to temperature conditions within the incubator to accomplish the double purpose of ventilation and heat control or limitation. The method disclosed in this application is claimed in copending application, Serial No. 664,795, filed April 6, 1933. Reference is made to Patent No. 1,837,458, issued December 22, 1931, to George T. Marksy, which claims certain subject matter disclosed herein.

In the drawings:

Figure 1 is a front elevation of an incubator unit embodying the invention herein claimed, the heating pipes and a wall fragment being extended to indicate their connection with a duplicate unit.

Figure 2 is a sectional view drawn generally on line 2—2 of Figure 1.

Figure 3 is an isometric view of the lower or the incubating section with parts of the walls broken away to show the interior.

Figure 4 is a fragmentary view (enlarged) in vertical section taken at right angles to that of Figure 2.

Figure 5 is a fragmentary view in horizontal section drawn to line 5—5 of Figure 2.

Figure 6 is a fragmentary view, also in hori-

zontal section, drawn to line 6—6 of Figure 2.

Figure 7 is a detailed view of the thermostatically controlled air inlet valve controlling mechanism and alarm signal, a portion of the heat chamber wall being illustrated in vertical section.

Like parts are identified by the same reference characters throughout the several views.

The incubator herein described is adapted to be constructed in one or more units which may be placed in a longitudinal series of any desired number of similar units connected with a common source, or sources, of heat and power. As shown in the drawings, each unit comprises one or more, (preferably a pair), of lower chambers, which, for convenience in description, will be designated as the incubating chambers, and taken together, these two chambers will be termed the incubating section of the unit in distinction from the upper section composed of hatching chambers. Access to the incubating chambers may be had through the doors 23 and 24 respectively. These incubating chambers are each designed to receive a considerable number of egg trays 25, one above the other and in close proximity, the distance between the trays being substantially equal to the vertical thickness of their supporting rails 26.

For convenience in description, the walls 27 and 28 of the incubating chambers will be referred to as the side walls of the incubating section, although, in a multiple series of units, these walls might be partition walls common to adjacent units. By way of distinction in the present description the wall 29 between the two incubating chambers will be designated as the central partition wall.

The doors 23 and 24 are hinged together, the leaves 30 and 31 having butts which receive a pintle 32, the lower end of which is extended and socketed in the head 33 of a screw 34 which is threaded into the central partition 29. The swinging margins of the doors are provided with latches 36 of any ordinary construction adapted to engage suitable catches carried by the side walls or door jambs. Each of the doorways may thus be made equal in width to the width of the chamber, the door constituting the entire front wall, from a point or line below the lowermost egg tray to a point or line above the uppermost egg tray, and when the door is opened, all of the trays in that chamber may be drawn out and replaced.

Also each door is double walled, and made to form part of the heat, fresh air and moisture distributing system, the outer and inner walls being separated from each other by the vertically extended strips 37 and 38. The strip 38 is located at the swinging margin of the door and is obliquely pitched to allow the door to close. The inner door wall 40 is attached to these spacing

the horizontally extending heating pipes 47 and 48, which are preferably paired and arranged to extend along and adjacent to the front and rear wall respectively. This space constitutes the heating chamber. The pipes 47 may be assumed to be the outflow pipes and the pipes 48 the return-flow pipes.

A motor driven shaft 50 extends vertically through the center of the incubating section and upwardly through the hatching section in the incubator. The partition 29 is provided with a slot 51 to receive the shaft 50, the lower end of the shaft having a bearing in the bottom 52 of the incubating section. A stirrer like impeller is secured to the shaft 50, which is approximately midway between the pairs of heating pipes 47 and 48. This impeller is composed of a horizontally disposed central web 53 and arcuate wings 54 perpendicular to the web, each wing being secured to the web along its arcuate center line, whereby air may be mixed and moved outwardly from the central portion of the impeller on each side of the web in substantially equal volumes. An electric motor 55 drives the shaft 50, the latter being the motor shaft, or a shaft coupled end to end thereto. The action of the impeller stirrer 54 results in creating a vacuum by the movement of the air through the aperture 63. This provides an area of reduced pressure in the top portion of the egg chamber into which the air gently flows.

The impeller operates underneath upper wall members 56, 57 and 58, the members 56 and 58 being the top walls of the incubating section, which support the hatching section. The wall member 57 is a thin metal strip which spans the space between the wall members 56 and 58 and is secured to their under surfaces along their inner margins. This forms the top wall of what may be termed an impeller chamber, the bottom wall 59 of which is spaced from the wall members 57 by the end walls 60 of the housing. These housing end walls extend entirely across the heating chamber from the rear wall of the incubator section to the front wall member 61 above the doors. The pipes 47 and 48 extend through apertures in these wall members 60.

The housing walls 57 and 59 have central apertures or impeller chamber inlets 63 and 64 respectively (Figure 4) through which air may reach the impeller, the air being drawn through the apertures by suction as in an ordinary centrifugal fan, except for the fact that the horizontally disposed disc 53 separates the current of air entering through the upper impeller inlet 63 from that entering through the lower impeller inlet 64.

The air reaches the upper opening 63 through a passage 65 in the top wall members 56 and 58 extending across the central portion of the incubator parallel to the front and

number of similar units connected with a common source, or sources, of heat and power. As shown in the drawings, each unit comprises one or more, (preferably a pair), of lower chambers, which, for convenience in description, will be designated as the incubating chambers, and taken together, these two chambers will be termed the incubating section of the unit in distinction from the upper section composed of hatching chambers. Access to the incubating chambers may be had through the doors 23 and 24 respectively. These incubating chambers are each designed to receive a considerable number of egg trays 25, one above the other and in close proximity, the distance between the trays being substantially equal to the vertical thickness of their supporting rails 26.

For convenience in description, the walls 27 and 28 of the incubating chambers will be referred to as the side walls of the incubating section, although, in a multiple series of units, these walls might be partition walls common to adjacent units. By way of distinction in the present description the wall 29 between the two incubating chambers will be designated as the central partition wall.

The doors 23 and 24 are hinged together, the leaves 30 and 31 having butts which receive a pintle 32, the lower end of which is extended and socketed in the head 33 of a screw 34 which is threaded into the central partition 29. The swinging margins of the doors are provided with latches 36 of any ordinary construction adapted to engage suitable catches carried by the side walls or door jambs. Each of the doorways may thus be made equal in width to the width of the chamber, the door constituting the entire front wall, from a point or line below the lowermost egg tray to a point or line above the uppermost egg tray, and when the door is opened, all of the trays in that chamber may be drawn out and replaced.

Also each door is double walled, and made to form part of the heat, fresh air and moisture distributing system, the outer and inner walls being separated from each other by the vertically extended strips 37 and 38. The strip 38 is located at the swinging margin of the door and is obliquely pitched to allow the door to close. The inner door wall 40 is attached to these spacing strips 37 and 38 so that vertical passages 41 are formed in each door.

The opposing wall, herein termed the rear wall of the unit, is also double and is formed with a corresponding passage 42 between the outer wall member 43 and the inner wall member 44, these two wall members being separated by the spacing strips 45. These passages 41 and 42 in the doors and rear wall respectively, receive the mixed air in the system associated with the heating chamber now to be described.

Between the upper egg tray or trays in the incubating section and the top wall members 56 of such section, sufficient space is provided for a slot 51 to receive the shaft 50, the lower [illegible] of the shaft having a bearing in the bottom [illegible] of the incubating section. A stirrer like impeller is secured to the shaft 50, which is approximately midway between the pairs of heating pipes 47 and 48. This impeller is composed of a horizontally disposed central web 53 and arcuate wings 54 perpendicular to the web, each wing being secured to the web along its arcuate central line, whereby air may be mixed and moved outwardly from the central portion of the impeller on each side of the web in substantially equal volumes. An electric motor 55 drives the shaft 50, the latter being the motor shaft, or a shaft [illegible] coupled end to end thereto. The action of the impeller stirrer 54 results in creating a vacuum by the movement of the air through the aperture 63. This provides an area of reduced pressure in the top portion of the egg chamber into which the air gently flows.

The impeller operates underneath upper wall members 56, 57 and 58, the members 56 and 58 being the top walls of the incubating section, which support the hatching section. The wall member 57 is a thin metal strip which spans the space between the wall members 56 and 58 and is secured to their under surfaces along their inner margins. This forms the top wall of what may be termed an impeller chamber, the bottom wall 59 of which is spaced from the wall members 57 by the end walls 60 of the housing. These housing end walls extend entirely across the heating chamber from the rear wall of the incubator section to the front wall member 58, [illegible] above the doors. The pipes 47 and 48 extend through apertures in these wall members 60.

The housing walls 57 and 59 have central apertures or impeller chamber inlets 62 and 63 respectively (Figure 4) through which air may reach the impeller, the air being drawn through the apertures by suction as in an ordinary centrifugal fan, except for the fact that the horizontally disposed disc 53 separates the current of air entering through the upper impeller inlet 62 from that entering through the lower impeller inlet 63.

The air reaches the upper opening 62 through a passage 65 in the top wall members 56 and 58 extending across the central portion of the incubator parallel to the front and rear walls. The bottom wall 64 of the hatching chamber hereinafter described is preferably slotted to increase the vertical dimensions of this passage in order that air may flow freely through it to the open spaces 66 between the end walls of the impeller housing and the side walls of the section. Part of the mixed air may pass outwardly through the egg trays and through the spaces 66 and then over the housing wall into the passage 65 and to the impeller through aperture 62. But the air ascending through these portions of the egg trays nearest the central partition will be deflected inwardly by the under surface of the lower housing wall

and to the under side of the impeller through the impeller inlet 63.

The end walls 60 of the impeller housing extend entirely across the incubator unit from front to rear as above explained, and the air thrown against them by the impeller is churned and deflected laterally to the heating pipes in eddies and counter currents in a manner peculiarly adapted to absorb and distribute the heat units without devitalizing the air as is done in cases where more prolonged contacts of particles of air with heated surfaces are permitted. This churning air also receives and distributes air from the moisture pans, and this aids in vitalization or/and in preventing devitalization. This churning air is also being constantly thrown by the impeller laterally as well as longitudinally and caused to pass downwardly in the passages 41 and 42, into the space between the bottom of the incubator and the lowest egg tray 25. Within this space, on each side of the central partition, horizontally disposed pulleys 68 are driven by a belt 69 from a pulley 70 on the motor driven shaft 50. Each of these pulleys is provided with a set of mixing arms 71 which preferably extend tangentially to an inner circle of the pulley and successively at right angles to each other. These arms and their associated pulleys revolve in the direction indicated by the arrows and thoroughly mix all of the air received from the front and rear passages preparatory to its upward movement through the egg trays.

The air passages in the front doors and rear walls form areas always occupied by warm air which act as insulating blankets on the sides of the column of egg trays to protect the eggs from cold air and to thereby prevent cold air impeding the convection flow within the egg chamber.

It will be observed that the currents of air enter the egg chamber horizontally from opposite sides and meet along a transverse center line, each opposing the momentum of the other and tending to cause an intermingling of the air along said line, said line including the axis of the mixing or distributing device having the mixing arms 71. Said arms are not formed to drive the air upwardly in the direction of the egg trays, but they operate in a horizontal plane and cut across the horizontal flowing sheets of air on each side of said center line thereby checking velocity and destroying momentum effects which would otherwise tend to produce an ascending column along the vertical plane of said center line. The air is thus distributed laterally, and has greater pressure or condensation than that exposed to the suction of the impeller above the egg trays, and it is obvious that it will flow upwardly through the trays and about the sides by reason of such differential pressures between the bottom and top portions of the chamber. The egg trays and eggs

and by dividing the ascending air so that one half of it travels laterally and passes around the end walls 60 of the impeller housing and the other half passes underneath the impeller housing to its bottom inlet 63, and by operating the impeller within the housing to again divide the air and move it laterally toward the front and rear into the passages 41 and 42, the development of either concentrated current or so called dead spots in the egg containing portions of the incubator chambers is absolutely prevented and a uniform temperature maintained in all portions thereof. Owing to the fact that the air is heated just prior to its descent through the passages 41 and 42 to the bottom portion of the egg chambers, maximum heating efficiency is attained, and the churning and mixing currents, added to the flow of air into the passages bring such a relatively large number of particles of air into contact with the heating surfaces that such surfaces may be kept relatively cool by rapid absorption of heat units, as compared with the heating surfaces in gravity systems, or even those in ordinary forced draft systems wherein all the air travels in one direction over such surfaces.

To insure continued operation of the mixing device by the belt 69, one of its pulleys is preferably provided with a stud shaft 72 carried by a slide 73 which is connected by a spring 74 with one wall of the chamber, whereby the belt 69 may be constantly maintained under a driving tension.

One of the means for renewing the air supply and continuously venting a sufficient portion of the air to carry off the exhalations from the eggs and the means for humidifying the circulating air will now be described.

The portion 61 of the front wall of the incubator, above the doors, is provided with a series of openings, viz. the openings 76, 77, 78 and 79. The opening 76 is a small circular opening which may be left constantly open for the admission of a small quantity of fresh air into one of the spaces 66 between the associated end wall 60 of the housing and the side wall 28. The air admitted through this opening will pass upwardly and inwardly along the passage 65 to the impeller to be churned, mixed with the other air and heated as above described. The opening 77 is similarly located to admit air into the space 66 between the other end wall 60 of the housing and the side wall 27 and this air must also pass to the impeller and downwardly to the bottom of the incubating chamber before reaching the eggs.

The air from both of these openings will of course be mingled by the action of the impeller, but in order that the flow of air admitted through the two openings may be regulated to a certain extent in accordance with temperature conditions within the incubator, I preferably provide a controlling valve 82 for the aperture 77 and

air with heated surfaces are permitted. This churning air also receives and distributes air from the moisture pans, and this aids in vitalization and/or in preventing devitalization. This churning air is also being constantly thrown by the impeller laterally as well as longitudinally and caused to pass downwardly in the passages 41 and 42, into the space between the bottom of the incubator and the lowest egg tray 25. Within this space, on each side of the central partition, horizontally disposed pulleys 68 are driven by a belt 69 from a pulley 70 on the motor driven shaft 50. Each of these pulleys is provided with a set of mixing arms 71 which preferably extend tangentially to an inner circle of the pulley and successively at right angles to each other. These arms and their associated pulleys revolve in the direction indicated by the arrows and thoroughly mix all of the air received from the front and rear passages preparatory to its upward movement through the egg trays.

The air passages in the front doors and rear walls form areas always occupied by warm air which act as insulating blankets on the sides of the column of egg trays to protect the eggs from cold air and to thereby prevent cold air impeding the convection flow within the egg chamber.

It will be observed that the currents of air enter the egg chamber horizontally from opposite sides and meet along a transverse center line, each opposing the momentum of the other and tending to cause an intermingling of the air along said line, said line including the axis of the mixing or distributing device having the mixing arms 71. Said arms are not formed to drive the air upwardly in the direction of the egg trays, but they revolve in a horizontal plane and cut across the horizontally flowing sheets of air on each side of said center line thereby checking velocity and destroying momentum effects which would otherwise tend to produce an ascending column along the vertical plane of said center line. The air is thus distributed laterally, and has greater pressure or concentration than that exposed to the suction of the impeller above the egg trays, and it is obvious that it will flow upwardly through the trays and about the eggs by reason of such differential pressures in the bottom and top portions of the chamber and between egg trays. The egg trays and eggs thereon serve as baffles, compelling or tending to cause a uniform distribution of the air, the latter flowing to a considerable extent as air discharged from foraminous partitions. It will also be observed that the suction pull upon the air in the top portion of the chamber is exerted angularly to the planes of the air flow in the bottom portion, and, in fact substantially at right angles thereto. This also tends to prevent concentration of the air along paths of least resistance as in ordinary practice, and all these factors insure proper ventilation of all parts of the egg containing space. By providing these mixing devices underneath the egg trays and operating them in co-operation with the impeller and suitable air heating means, temperature maintained in all portions thereof. Owing to the fact that the air is heated just prior to its descent through the passages 41 and 42 to the bottom portion of the egg chambers, maximum heating efficiency is attained, and the churning and mixing currents, added to the flow of air into the passages bring such a relatively large number of particles of air into contact with the heating surfaces that such surfaces may be kept relatively cool by rapid absorption of heat units, as compared with the heating surfaces in gravity systems, or even those in ordinary forced draft systems wherein all the air travels in one direction over such surfaces.

To insure continued operation of the mixing device by the belt 69, one of its pulleys is preferably provided with a stud shaft 72 carried by a slide 73 which is connected by a spring 74 with one wall of the chamber, whereby the belt 69 may be constantly maintained under a driving tension.

One of the means for renewing the air supply and continuously venting a sufficient portion of the air to carry off the exhalations from the eggs and the means for humidifying the circulating air will now be described.

The portion 61 of the front wall of the incubator, above the doors, is provided with a series of openings, viz. the openings 76, 77, 78 and 79. The opening 76 is a small circular opening which may be left constantly open for the admission of a small quantity of fresh air into one of the spaces 66 between the associated end wall 60 of the housing and the side wall 28. The air admitted through this opening will pass upwardly and inwardly along the passage 65 to the impeller to be churned, mixed with the other air and heated as above described. The opening 77 is similarly located to admit air into the space 66 between the other end wall 60 of the housing and the side wall 27 and this air must also pass to the impeller and downwardly to the bottom of the incubating chamber before reaching the eggs.

The air from both of these openings will of course be mingled by the action of the impeller, but in order that the flow of air admitted through the two openings may be regulated to a certain extent in accordance with temperature conditions within the incubator, I preferably provide a controlling valve 82 for the aperture 77 and adjust this valve by means of a thermostat 83 which operates through a yoke shaped lever 84 and rod 85 to open and close the valve, the lever 84 being fulcrumed at 86. The lever 84 will preferably be included in the circuit of a battery or other source of electric energy indicated conventionally at 87.

Said circuit also preferably includes an alarm signal indicated conventionally at 88. The inner end of the rod 85 is pivoted to the lever at 90 and has a projecting portion 91 composed of electrically conductive material adapted to contact with a terminal 92 in said circuit, whereby the circuit may be closed and the signal given when the expansion of the thermostat exceeds a predetermined limit. Similarly, an undue contraction

of the thermostat may bring a terminal arm 93 into engagement with a contact piece 94 to close the circuit and operate the signal.

The opening 78 is a vent opening. This opening is preferably flanked on all sides by inwardly projecting passage walls 95, extending over the adjacent heating pipes 47 and 48 into proximity to the impeller, whereby a portion of the air thrown outwardly by centrifugal force by the impeller blades 54 will be driven through the opening 78 to the exterior without absorbing any material number of heat units from the heating pipes. The volume of air delivered through this outlet opening may be regulated manually by means of the exterior shutters or slides 96.

There are two openings 79 in the front wall member 61 and these are normally closed by interior hinged lids 100 which will be pushed to open position by a hook rod 101 when such rod is inserted to adjust a cover 102 upon a water containing humidifier pan 103. The cover 102 has an upwardly projecting flange 104 which may be engaged by the hook rod to shift the cover to its proper position. The cover 102 has a downwardly projecting flange 105, to prevent the escape of vapor from underneath it, and the humidifying capacity of the humidifier pan will, therefore, be determined by the uncovered area. The pans 103 are supported by the rods 109 and their rear walls have hook flanges 108 to engage over one of the heating pipes to prevent the pans from shifting in position when their covers are being adjusted. Water is supplied to the pans from a source of constant level supply through a pipe 111 and hose connection 111'.

The auxiliary heaters and heat controlling devices will now be described.

A set of electric heaters 110 are located in the space between the front wall member 61 and the adjacent heating pipe 47 at which point they will be in the path of the air which is being driven toward the door passages 41. These heaters are connected in parallel in a circuit which is preferably independent of that controlled by the air inlet thermostat and are manually controlled by the switch 112. The heating circuit is also automatically controlled by the electric thermostat conventionally indicated at 113 (Figure 1), this thermostat being located near the bottom of the incubating unit where it will be responsive to the temperature of the air which is about to be delivered through the egg trays. When the manually operable switch 112 is closed, the electric thermostat 113 will function to control the heaters 110 in accordance with the temperature of the air circulated about the eggs within narrower limits of maximum and minimum temperature than is possible to obtain by any control of a major heating system which circulates a heating fluid through

Above the incubator chambers and the heating chamber associated therewith, a series of superposed hatching chambers are mounted as shown in Figures 1 and 2. Each hatching chamber receives one egg tray of the same size as those in the incubating section and the door 115 in the front wall of the chamber is of a size to permit the insertion and removal of the trays. Gravity ventilation is maintained through the thermostatically controlled shutter or damper 116, which allows air to pass out of the chamber. Air is admitted through the slot 117 in the lower portion of the front wall and is directed across the humidifying pan 118 underneath a horizontal baffle wall 119, which extends inwardly from the front wall to a point near the transverse center line of the humidifying pan. Except as herein described, these hatching chambers may be constructed in any ordinary manner, and as their structural features are not claimed herein, further description is unnecessary.

During the first seventeen days of incubation, the eggs will be kept in one of the incubating chambers comprising the lower section of the unit. Each egg tray may be marked for identification and a record kept of the time of its insertion in the incubating chamber so that no attention need be paid to its position in that chamber, the temperature being constant and uniform in all portions thereof. At the end of the seventeen day period the tray will be removed from the incubating section and placed in one of the superposed hatching chambers where it will remain until the chicks have hatched. No nursery tray will be required and the hatching chambers will be made of such size as to receive and support the trays taken from the incubating section, all trays being exactly alike; and provided with egg tilting mechanism which may be applied to either the front or rear wall of the tray as set forth in the companion application which has become Patent Number 1,796,872 issued March 17, 1931. Connections for operating such egg turning mechanism are shown at the left hand of the two lower trays shown partly in section in Figure 2.

It has been found in practice that during the first seventeen days of incubation it will be advantageous to provide uniform and constant conditions of heat, moisture and air circulation, the requirement for ventilation being considerably below that required by the eggs during the last few days of incubation which has herein been termed the hatching period. During the first seventeen days the admission of fresh air is largely a matter of maintaining the oxygen supply although it is desirable to change the supply to a sufficient extent to prevent the air from becoming exhausted or foul. The expelled air and other gases

thrown outwardly by centrifugal force by the impeller blades 84 will be driven through the opening 78 to the exterior without absorbing any material number of heat units from the heating pipes. The volume of air delivered through this outlet opening may be regulated manually by means of the exterior shutters or slides 96.

There are two openings 79 in the front wall member 61 and these are normally closed by interior hinged lids 100 which will be pushed to open position by a hook rod 101 when such rod is inserted to adjust a cover 102 upon a water containing humidifier pan 103. The cover 102 has an upwardly projecting flange 104 which may be engaged by the hook rod to shift the cover to its proper position. The cover 102 has a downwardly projecting flange 105 to prevent the escape of vapor from underneath it, and the humidifying capacity of the humidifier pan will, therefore, be determined by the uncovered area. The pans 103 are supported by the rods 109 and their rear walls have hook flanges 108 to engage over one of the heating pipes to prevent the pans from shifting in position when their covers are being adjusted. Water is supplied to the pans from a source of constant level supply through a pipe 111 and hose connection 111'.

The auxiliary heaters and heat controlling devices will now be described.

A set of electric heaters 110 are located in the space between the front wall member 61 and the adjacent heating pipe 47 at which point they will be in the path of the air which is being driven toward the door passages 41. These heaters are connected in parallel in a circuit which is preferably independent of that controlled by the air inlet thermostat and are manually controlled by the switch 112. The heating circuit is also automatically controlled by the electric thermostat conventionally indicated at 113 (Figure 1), this thermostat being located near the bottom of the incubating unit where it will be responsive to the temperature of the air which is about to be delivered through the egg trays. When the manually operable switch 112 is closed, the electric thermostat 113 will function to control the heaters 110 in accordance with the temperature of the air circulated about the eggs within narrower limits of maximum and minimum temperature than is possible to obtain by any control of a major heating system which circulates a heating fluid through the pipes 47 and 48.

A lamp 114 may be included in the circuit of the heaters 110 and is preferably located in the vent passage 95 where it can be viewed through the vent opening 78. This lamp will indicate to an inspector whether the heaters are functioning. It will, of course, be understood that the heater for the major heating system will be controlled in an ordinary manner, and it is therefore not deemed necessary to illustrate or describe in detail the source of heat for the pipes 47 and 48 and the means for controlling it.

The hatching chamber portion of the unit will now be described.

through the thermostatically controlled [illegible] or damper 116, which allows air to pass out of the chamber. Air is admitted through the [illegible] 117 in the lower portion of the front wall and is directed across the humidifying pan 118 underneath a horizontal baffle wall 119, which extends inwardly from the front wall to a point near the transverse center line of the humidifying pan. Except as herein described, these hatching chambers may be constructed in any ordinary manner, and as their structural features are not claimed herein, further description is unnecessary.

During the first seventeen days of incubation the eggs will be kept in one of the incubating chambers comprising the lower section of the unit. Each egg tray may be marked for identification and a record kept of the time of its insertion in the incubating chamber so that no attention need be paid to its position in that chamber, the temperature being constant and uniform in all portions thereof. At the end of the seventeen day period the tray will be removed from the incubating section and placed in one of the superposed hatching chambers where it will remain until the chicks have hatched. No nursery tray will be required and the hatching chambers will be made of such size as to receive and support the trays taken from the incubating section, all trays being exactly alike; and provided with egg tilting mechanism which may be applied to either the front or rear wall of the tray as set forth in the companion application which has become Patent Number 1,796,872 issued March 17, 1931. Connections for operating such egg turning mechanism are shown at the left hand of the two lower trays shown partly in section in Figure 2.

It has been found in practice that during the first seventeen days of incubation it will be advantageous to provide uniform and constant conditions of heat, moisture and air circulation, the requirement for ventilation being considerably below that required by the eggs during the last [illegible] days of incubation which has herein been termed the hatching period. During the first seventeen days the admission of fresh air is largely a matter of maintaining the oxygen supply although it is desirable to change the supply to a sufficient extent to prevent the air from becoming extremely foul. The expelled air and other gases must permit a certain degree of purification, [illegible] provide space into which the fresh air may be drawn. During the hatching period [illegible] ventilation is desirable, but gravity circulation preferred to the rapidly moving air in the [illegible] of the incubating section. Rapidly moving absorbs more moisture from the shells of [illegible] than slowly moving currents and the rapidly moving currents would also tend to chill the hatched chickens by promoting rapid evaporation. It has been found that separate hatching chambers better serve the exacting requirements for proper ventilation, humidification and protection from drafts during the hatching period.

...tain a segregation of the chicks from one egg ... from those hatching in another, each hatch... chamber being arranged to receive one tray.

I claim:

1. In an incubator, the combination with an ...ubating chamber, of a heating chamber pro... with major heat radiating devices, an auxil... electrical heater provided with thermostatic ... controlling means in the incubating cham..., and power driven means for circulating air ... the main and auxiliary heating devices ...sively and distributing the heated air uni... throughout the incubating chamber, said ... driven means being arranged and adapted ... mix the air heated by both heaters prepara... to its delivery to the eggs in the incubating ...

2. In an incubator, the combination with an ...ubating chamber, of a superposed heating ..., a bottom mixing chamber in communi... with the heating chamber at the sides of ... incubating chamber and provided with means ... mixing and distributing air to the incubating ..., temperature controlled major and aux... heating devices independently operable ... the heating chamber, and power driven ... for circulating air across the major and ... heating devices successively and down... in said passages to the bottom mixing ..., said incubating chamber being adapted ... form a return passage through which air may ... in distributed condition from the mixing ... to the heating chamber.

3. In an incubator, the combination with an ...ubating chamber, of a superposed heating ..., sets of radiator pipes for circulating a ... fluid through said heating chamber, an ... mixing and directing chamber between said ... of pipes, and an air impeller within said cham... said chamber having walls apertured to admit ... the incubating chamber along the axis of ... impeller and being provided with closed ends ... sides open along said pipes, whereby the im... may churn and circulate air across the ..., the walls of said incubator having passages ... to receive such air and convey it to the ... of the incubating chamber, and means for ... the air upwardly through and with ...tial uniformity in all portions of the incu... chamber to the suction side of the impeller.

4. In an incubator, the combination with an ... chamber, of major heat radiating de... a radiator for circulating heating ... temperature controlled independently op... auxiliary heater, power driven means for ... and circulating air across the major and ... heating devices and through the incu..., means for delivering air from one ... the incubating chamber to one side of ... in which the impeller revolves, and from ...tion of the incubating chamber to an... of the impeller, whereby to promote ... driven air mixing and distributing device in the path of such air at the opposite side of the incubating chamber from that at which the air forcing means is located, said mixing and distributing device being formed to intercept, break up, and laterally distribute currents of air moving from the air moving device, whereby such air may flow through the incubating portion of the chamber relieved of its momentum energy.

6. In an incubator, the combination with an incubating chamber having front doors and rear walls provided with vertically extending passages communicating with space above and below said chamber, a major heating system having a radiator for circulatory heating fluid in the space above said chamber, auxiliary temperature controlled electrical heaters, and means for churning and moving air from the central portion of said space across said radiator and electrical heater and downwardly through the door and rear wall passages to the space underneath the incubating chamber, said incubating chamber being formed to constitute a return passage through which air may pass in distributed form upwardly to the receiving side of the air forcing means.

7. In an incubator, the combination with an incubating chamber having front doors and rear walls provided with vertically extending passages communicating with space above and below said chamber, sets of radiator pipes in the space above said chamber, auxiliary temperature controlled electrical heaters and means for churning and forcing air from the central portion of said space across said pipes and electrical heater and downwardly through the door and rear wall passages to the space underneath the incubating chamber, said incubating chamber being formed to constitute a return passage through which air may pass in distributed form upwardly to the receiving side of the air moving means, together with co-operative means for humidifying the circulating air and thoroughly mixing all portions of such air before delivering it to the incubating chamber.

8. In an incubator, the combination with an incubating chamber, radiator pipes and electrical heaters disposed above said chamber, temperature controlled means for admitting air from the exterior for co-operative heating control, independently operable temperature controlled means for opening and closing the circuit of the electrical heaters, and means for mixing and circulating air across the radiator pipes and electrical heaters and distributing it through the incubating chamber for a uniform heating of all portions thereof, said circulating means including an air receiving housing provided with inlets in its top and bottom walls, a power driven rotary impeller having its central portions disposed to receive air from said inlets and adapted to move such air outwardly centrifugally, said housing having end walls against which said air may be

...sively and distributing the heated air uni... throughout the incubating chamber, said ... driven means being arranged and adapted ... the air heated by both heaters prepara... to its delivery to the eggs in the incubating ...ber.

... In an incubator, the combination with an ...ating chamber, of a superposed heating ...ber, a bottom mixing chamber in communi... with the heating chamber at the sides of ... incubating chamber and provided with means ... mixing and distributing air to the incubating ...ber, temperature controlled major and aux... heating devices independently operable ... the heating chamber, and power driven ... for circulating air across the major and ... heating devices successively and down... in said passages to the bottom mixing ...ber, said incubating chamber being adapted ... form a return passage through which air may ... in distributed condition from the mixing ...ber to the heating chamber.

... In an incubator, the combination with an ...ating chamber, of a superposed heating ...ber, sets of radiator pipes for circulating a ... fluid through said heating chamber, an ... mixing and directing chamber between said ... of pipes, and an air impeller within said cham... said chamber having walls apertured to admit ... from the incubating chamber along the axis of ... impeller and being provided with closed ends ... sides open along said pipes, whereby the im... may churn and circulate air across the ..., the walls of said incubator having passages ... to receive such air and convey it to the ... of the incubating chamber, and means for ...ting the air upwardly through and with ...tial uniformity in all portions of the incu... chamber to the suction side of the impeller.

... In an incubator, the combination with an ...ting chamber, of major heat radiating de... including a radiator for circulating heating ... a temperature controlled independently op... auxiliary heater, power driven means for ... and circulating air across the major and ... heating devices and through the incu... chamber, means for delivering air from one ... of the incubating chamber to one side of ... in which the impeller revolves, and from ... portion of the incubating chamber to an... ... of the impeller, whereby to promote ... and distribution of the air flowing ... the incubating chamber.

... In an incubator, the combination with a ... chamber and an incubating chamber, of ... circulating, major heat radiating devices, ... controlled, relatively sensitive, in... responsive and independently operable ... heating devices, power driven means lo... in the heating chamber adjacent the heat ... and auxiliary heating device and adapt... for ... and forcing air across the major and ... heating devices successively and thence ... the incubating chamber from an opposite ..., together with a co-operating power walls provided with vertically extending passages communicating with space above and below said chamber, a major heating system having a radiator for circulatory heating fluid in the space above said chamber, auxiliary temperature controlled electrical heaters, and means for churning and moving air from the central portion of said space across said radiator and electrical heater and downwardly through the door and rear wall passages to the space underneath the incubating chamber, said incubating chamber being formed to constitute a return passage through which air may pass in distributed form upwardly to the receiving side of the air forcing means.

7. In an incubator, the combination with an incubating chamber having front doors and rear walls provided with vertically extending passages communicating with space above and below said chamber, sets of radiator pipes in the space above said chamber, auxiliary temperature controlled electrical heaters and means for churning and forcing air from the central portion of said space across said pipes and electrical heater and downwardly through the door and rear wall passages to the space underneath the incubating chamber, said incubating chamber being formed to constitute a return passage through which air may pass in distributed form upwardly to the receiving side of the air moving means, together with co-operative means for humidifying the circulating air and thoroughly mixing all portions of such air before delivering it to the incubating chamber.

8. In an incubator, the combination with an incubating chamber, radiator pipes and electrical heaters disposed above said chamber, temperature controlled means for admitting air from the exterior for co-operative heating control, independently operable temperature controlled means for opening and closing the circuit of the electrical heaters, and means for mixing and circulating air across the radiator pipes and electrical heaters and distributing it through the incubating chamber for a uniform heating of all portions thereof; said circulating means including an air receiving housing provided with inlets in its top and bottom walls, a power driven rotary impeller having its central portions disposed to receive air from said inlets and adapted to move such air outwardly centrifugally, said housing having end walls against which said air may be moved and churned, and outlet openings to deliver it in the direction of the pipes and electrical heaters, preparatory to its delivery to the incubating chamber.

9. In an incubator, the combination with an incubating chamber having space above its egg receiving portion subdivided to provide passages for ascending currents of air in the ends of said space and descending currents of air at the sides thereof, independently operable heating elements in the side portion of said space, and an intermediate power driven impeller for circulating air, said subdivision being adapted to direct air from

the incubating chamber through said end passages to the upper side of the impeller and to direct additional air to the underside thereof from other portions of the incubating chamber, said impeller having a horizontally disposed central web adapted to separate the air received from above from that received from below, and means for delivering the downwardly moving air currents to the bottom portions of the incubating chamber.

10. In an incubator, the combination with an incubating chamber, forming an upward passage for air and flanked on two sides with downward passages leading to space underneath the incubating chamber, of an impeller chamber above the incubating chamber, closed at its ends and having centrally apertured top and bottom walls and open sides, the apertures in the top and bottom walls being respectively in communication with opposite side portions of the incubating chamber, and the open sides being in registry with said downward passages, and an air impelling rotary device in the impeller chamber and disposed for rotation in a horizontal plane.

11. In an incubator provided with a heater dependent upon the combustion of fuel, the combination of an incubating chamber and a heating chamber provided with heat radiating devices connected with said source of heat supply, an auxiliary electrical heater, thermostatic means for controlling the current supply to said electrical heater, and power driven means for mechanically circulating air through said chambers and for mixing air coming from the respective heaters preparatory to its delivery to the incubating portion of the incubating chamber, said air mixing device being formed to break up air currents, to laterally distribute the air in a manner to maintain a differential pressure throughout the incubating portion of the chamber between the inlet and the outlet sides thereof, and to regulate the flow of air over the eggs in accordance with such differential pressure, substantially relieved of momentum effects which would otherwise tend to prevent such distribution.

12. In an incubator the combination with an incubating chamber, of an exterior chamber provided with an impelling device adapted to deliver sheets of air into the incubating chamber from opposite sides of one end portion and to withdraw air from other sides of the opposite end portion, and momentum checking, air distributing power driven means located substantially at the meeting line of the inlet currents, and adapted to drive the air laterally and interrupt propulsion along the line of circulation, whereby the air will be caused to flow through the incubating chamber by reason of differential pressure at the inlet and outlet ends thereof, independently of its velocity at the inlets.

13. In an incubator provided with an incubating chamber having inlets and outlets at its respective end portions and an exterior heating chamber provided with humidifying and circulating means adapted to withdraw air through said outlets and return it through the inlets, and co-operating power driven means adjacent the said inlets for breaking up the air currents, distributing the air laterally, and allowing it to flow through the portions of the incubating chamber under differential pressures between the inlet and outlet ends, and sets of horizontally disposed egg trays filling the intermediate space and tending to preserve said lateral distribution, said circulating means being provided with a central web and suction inlets at opposite sides of said web to equalise the suction at the outlets of the incubating chamber.

14. An incubator unit adapted for assembly with other units in a series having a common source of heat supply, said unit comprising a heating chamber and a pair of egg chambers partially separated by a central partition, and provided with hollow front and rear walls having slot-like openings at top and bottom affording communication between the heating chamber and the bottom of each egg chamber, humidifying pans in the heating chamber and power driven means for churning the air across the humidifying pans and heating devices, said churning means being adapted to move air downwardly in the front and rear wall passages, and into the heating chamber with equalised suction from other sides of the top portion of the incubating chamber.

GEORGE T. MARKEY.

chamber.

10. In an incubator, the combination with an incubating chamber, forming an upward passage for air and flanked on two sides with downward passages leading to space underneath the incubating chamber, of an impeller chamber above the incubating chamber, closed at its ends and having centrally apertured top and bottom walls and open sides, the apertures in the top and bottom walls being respectively in communication with opposite side portions of the incubating chamber, and the open sides being in registry with said downward passages, and an air impelling rotary device in the impeller chamber and disposed for rotation in a horizontal plane.

11. In an incubator provided with a heater dependent upon the combustion of fuel, the combination of an incubating chamber and a heating chamber provided with heat radiating devices connected with said source of heat supply, an auxiliary electrical heater, thermostatic means for controlling the current supply to said electrical heater, and power driven means for mechanically circulating air through said chambers and for mixing air coming from the respective heaters preparatory to its delivery to the incubating portion of the incubating chamber, said air mixing device being formed to break up air currents, to laterally distribute the air in a manner to maintain a differential pressure throughout the incubating portion of the chamber between the inlet and the outlet sides thereof, and to regulate the flow of air over the eggs in accordance with such differential pressure, substantially relieved of momentum effects which would otherwise tend to prevent such distribution.

12. In an incubator the combination with an incubating chamber, of an exterior chamber provided with an impelling device adapted to deliver by reason of differential pressure [illegible] outlet ends thereof, independently of its velocity at the inlets.

13. In an incubator provided with an incubating chamber having inlets and outlets at its respective end portions and an exterior heating chamber provided with humidifying and circulating means adapted to withdraw air through said outlets and return it through the inlets, and co-operating power driven means adjacent the said inlets for breaking up the air currents, distributing the air laterally, and allowing it to flow through the portions of the incubating chamber under differential pressures between the inlet and outlet ends, and sets of horizontally disposed egg trays filling the intermediate space and tending to preserve said lateral distribution, said circulating means being provided with a central web and suction inlets at opposite sides of said web to equalize the suction at the outlets of the incubating chamber.

14. An incubator unit adapted for assembly with other units in a series having a common source of heat supply, said unit comprising a heating chamber and a pair of egg chambers partially separated by a central partition, and provided with hollow front and rear walls having slot-like openings at top and bottom affording communication between the heating chamber and the bottom of each egg chamber, humidifying pans in the heating chamber and power driven means for churning the air across the humidifying pans and heating devices, said churning means being adapted to move air downwardly in the front and rear wall passages, and into the heating chamber with equalized suction from other sides of the top portion of the incubating chamber.

GEORGE T. MARKEY.

Defendants' Exhibit No. 51.

	James	Smith
Discharged Air	5,880 Heat Units (B.T.U.'s)	3,440 Heat Units (B.T.U.'s)
Egg Heat at Top of Column	1,275 B.T.U.'s	3,575 B.T.U.'s
NO Egg Heat Returned in James		+ 135 B.T.U.'s

Egg Heat Returned in Smith towards the bottom of the egg column for more use.

Based on Taggart's Heat Chart Per Plaintiff's Exhibit No. 3

DEFENDANT'S EXHIBIT No. 54

DEFENDANT S' EXHIBIT No. 55 A

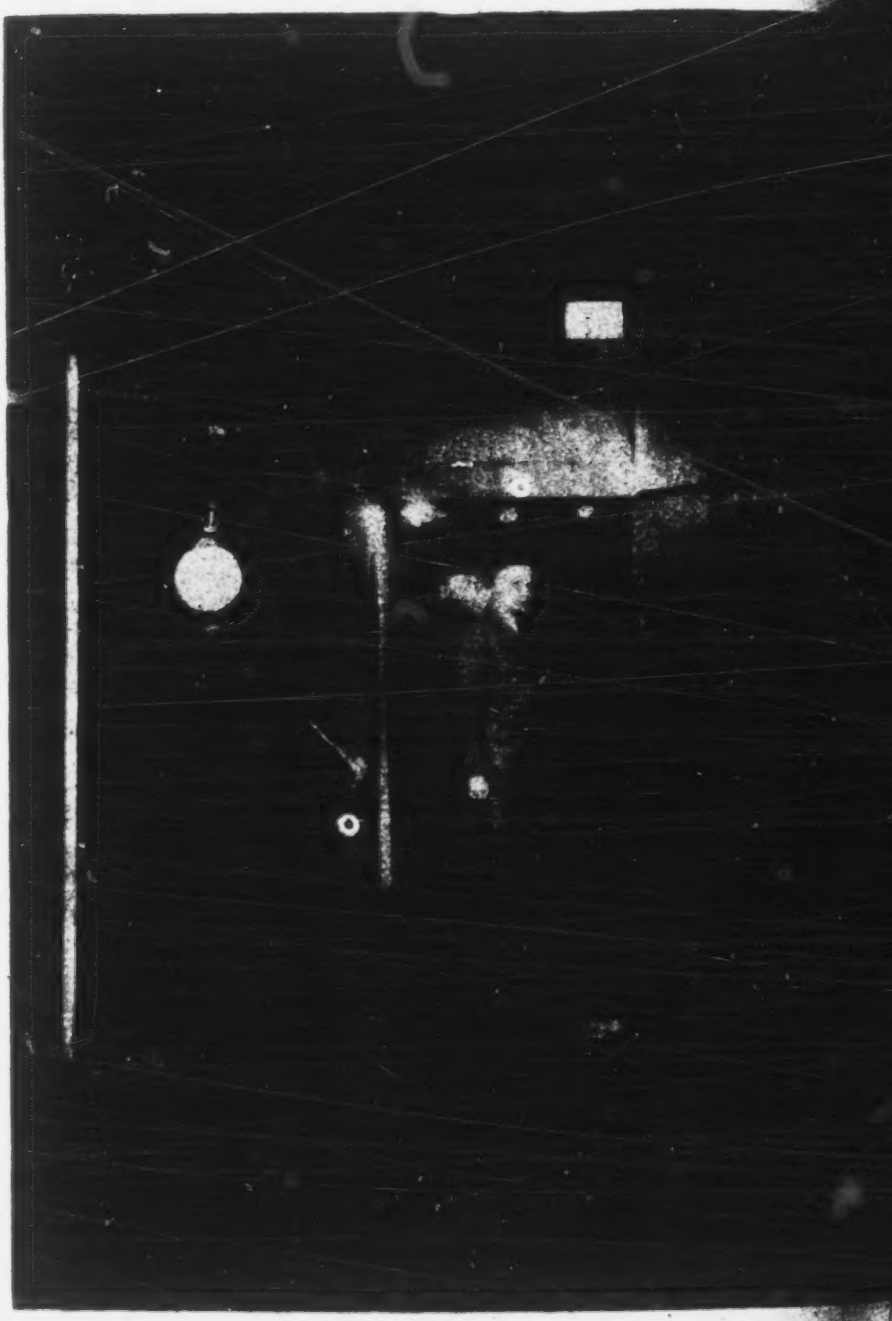
1179

DEFENDANT'S EXHIBIT No. 55 B

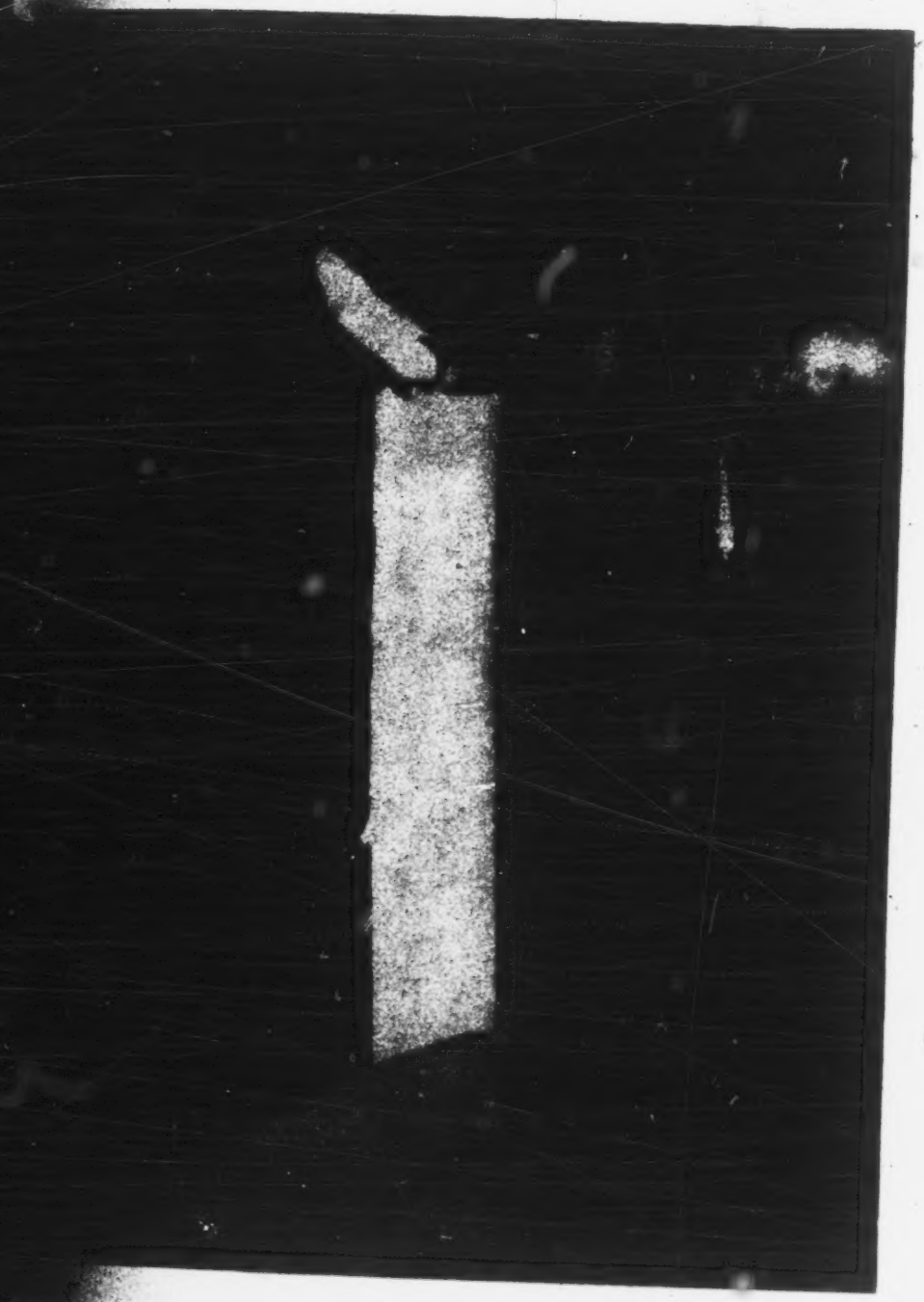
1474

DEFENDANT S' EXHIBIT No. 55 C

DEFENDANT'S EXHIBIT No. 55 D

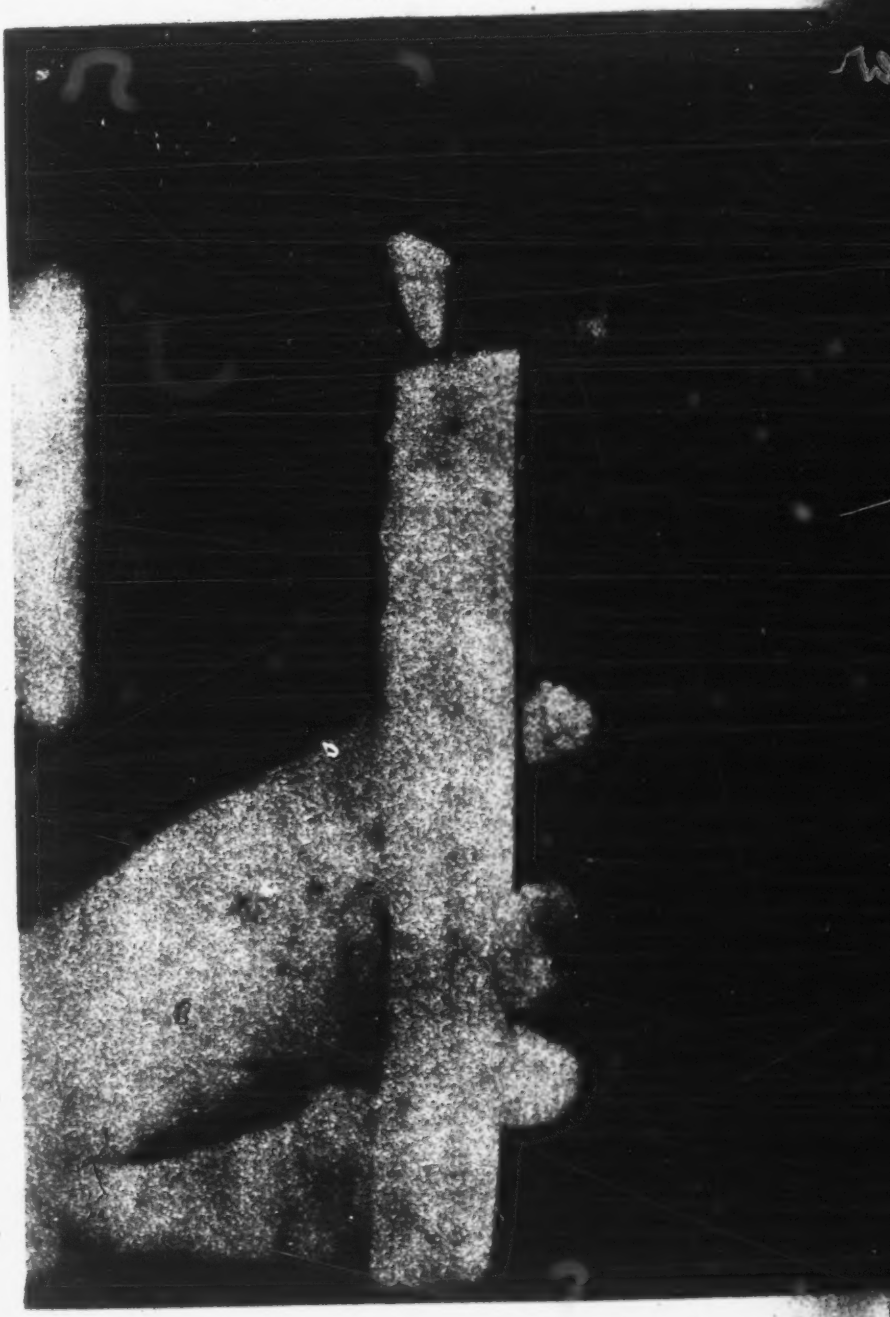


DEFENDANT 5' EXHIBIT No. 56 A



1183

DEFENDANT'S EXHIBIT No. 56-B



1478

DEFENDANT S' EXHIBIT No. 56 C

1184

1479

DEFENDANT'S EXHIBIT No. 57 A

DEFENDANT S' EXHIBIT No. 57 B

1186

1481

1187

DEFENDANT'S EXHIBIT No. 57 C

1482

DEFENDANT 8' EXHIBIT No. 58

PROCTOR

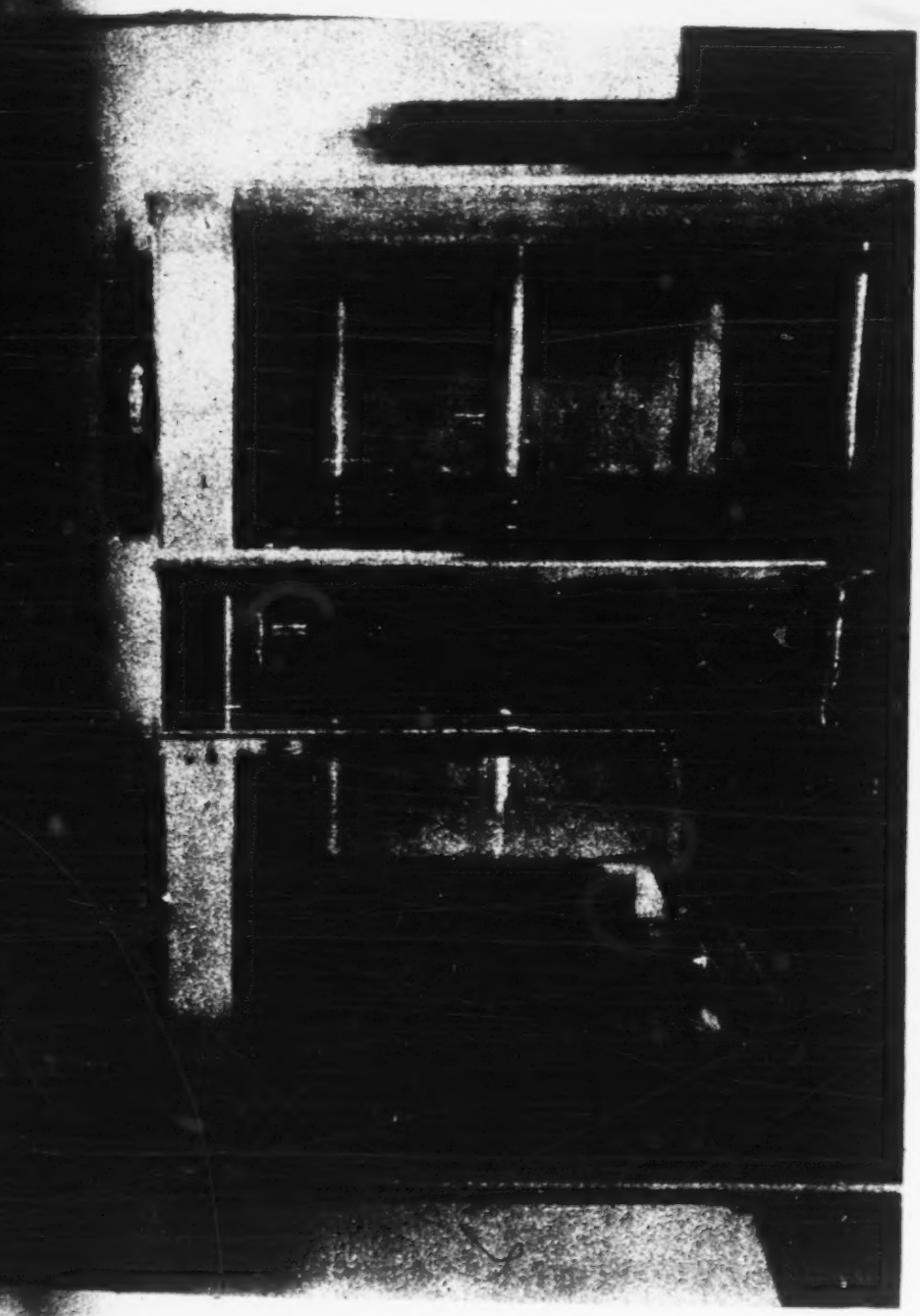
DEFENDANT S' EXHIBIT No. 58

1194

SCHWARTZ

1489

1490



1197

1492

DEFENDANT S' EXHIBIT No. 58

GOLDSTEIN

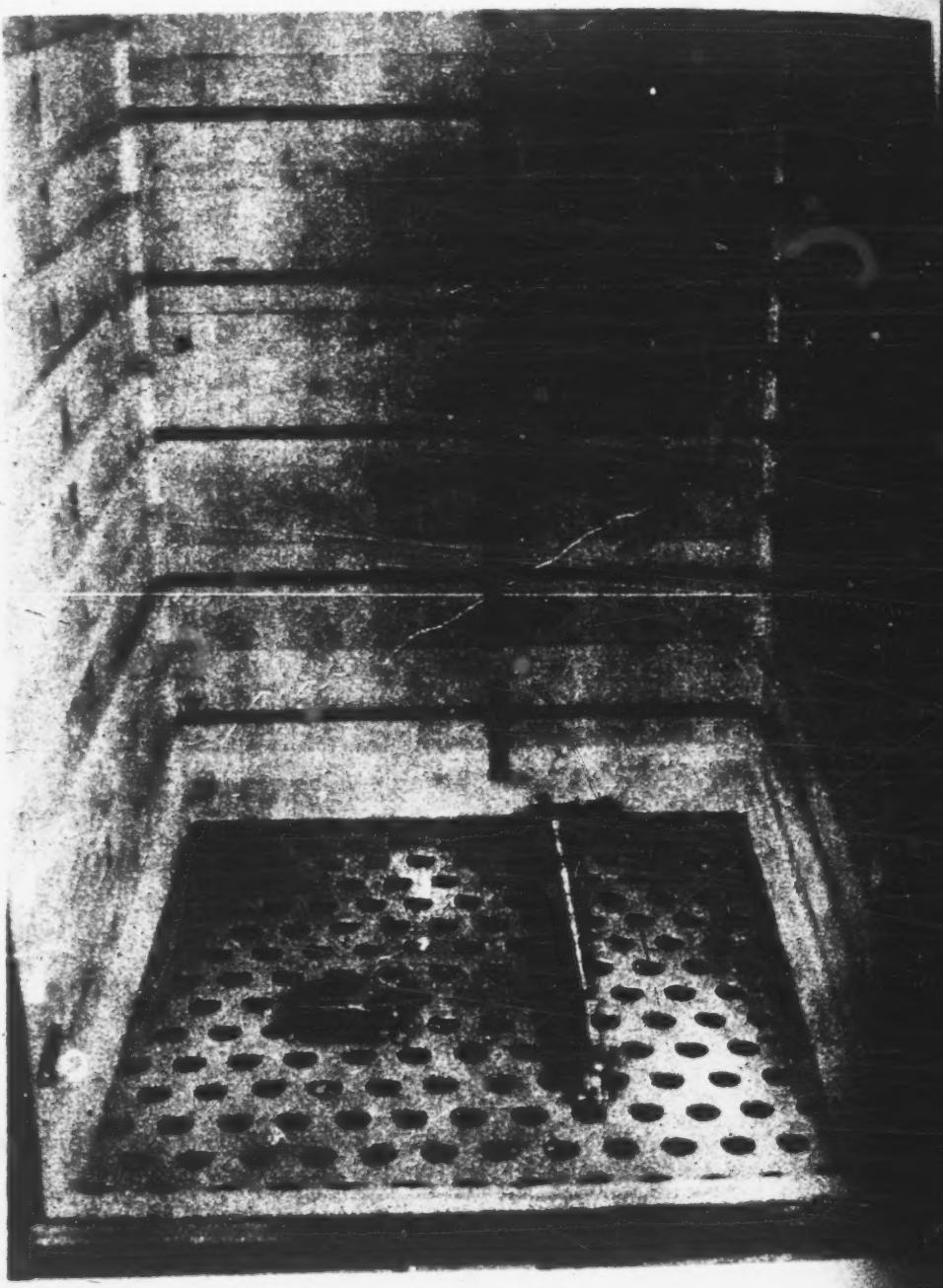
1201

1496

1203

1498

1203



1498

1205

1500

1207

1502

DEFENDANT S' EXHIBIT No. 58 1208

STULIK

1503

1209

1504

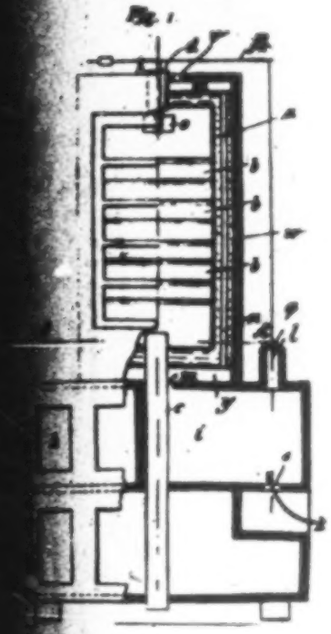
1505

1506

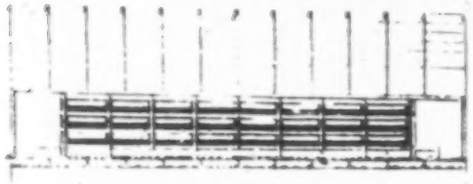
1507

DEFENDANT S' EXHIBIT No. 59

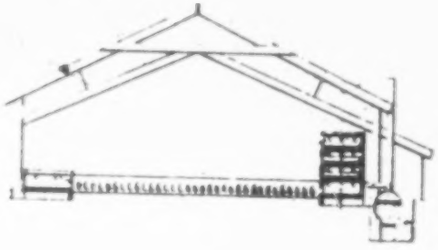
No. 1
STULIK
GERMAN PATENT 155,917
NOVEMBER 11, 1904
INCUBATOR



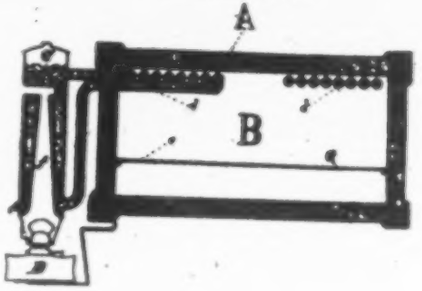
No. 2
GUERIN
3019 MARCH 30, 1843
EGG HATCHING APPARATUS



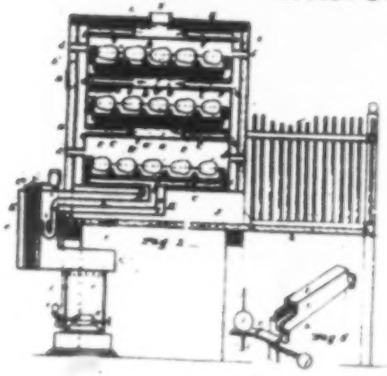
No. 3
GUERIN
3019 MARCH 30, 1843
EGG HATCHING APPARATUS



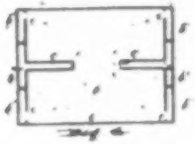
No. 4
CYPHERS
330,163 DECEMBER 4, 1884
INCUBATOR



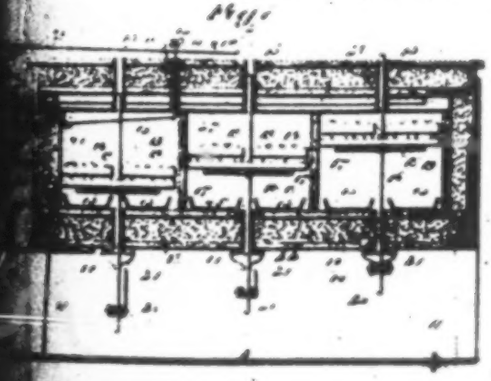
No. 5
MESCHTER 347,946
INCUBATOR AUGUST 24, 1886



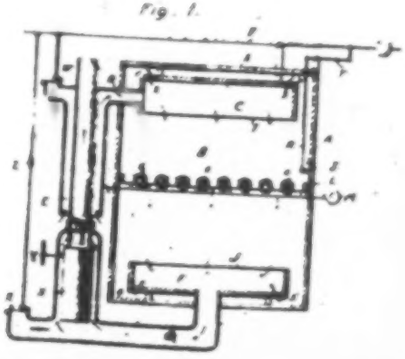
No. 6
MESCHTER
347,946 AUGUST 24, 1886
INCUBATOR



No. 7
N. HASSLAM
INCUBATOR.
No. 548,107. Patented May 28, 1895.



No. 8
G. T. WOODS
INCUBATOR
Patented Aug. 29, 1899



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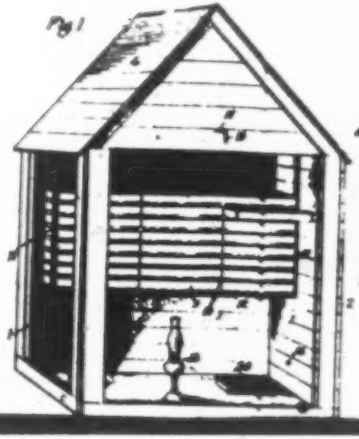
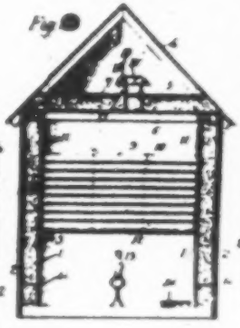
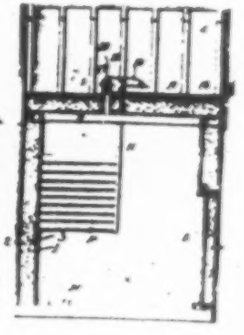


No. 10
BELL
691,837 JAN. 28, 1902
INCUBATOR



No. 11
BELL
691,837 JAN. 28, 1902
INCUBATOR



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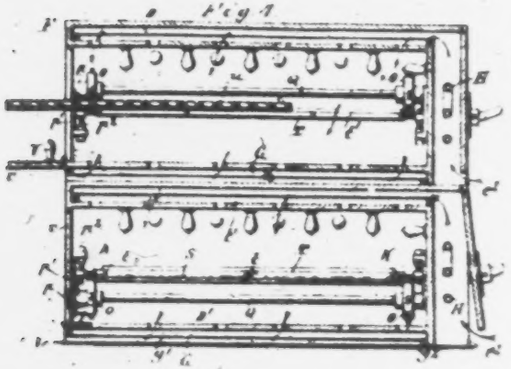
No. 12
PERKINS
798,697 SEPT. 5, 1905
INCUBATOR



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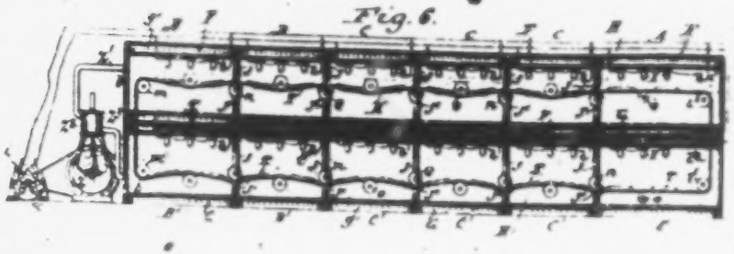
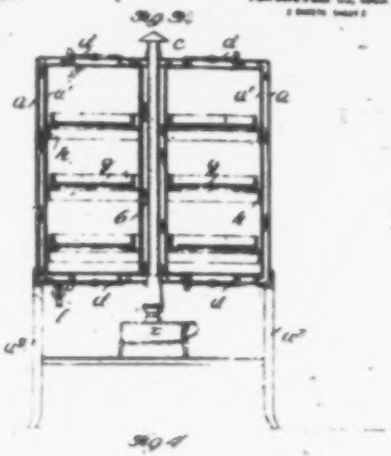
PERKINS
798,697 SEP'T. 5, 1905
INCUBATOR



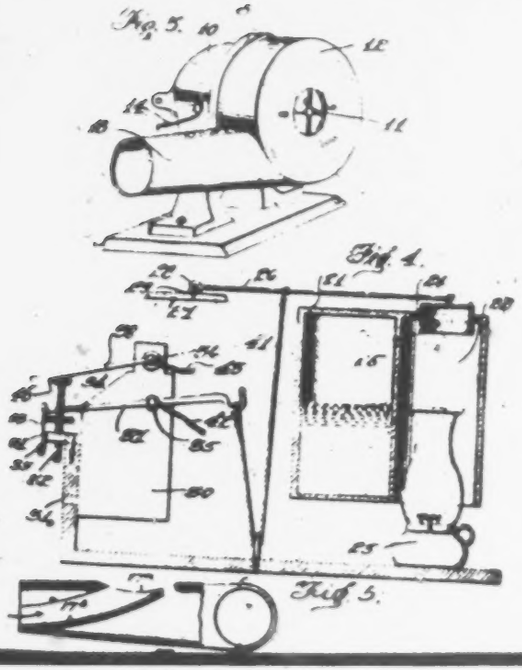
No. 14 DEF. Ex 59 page 8

1,144,938.



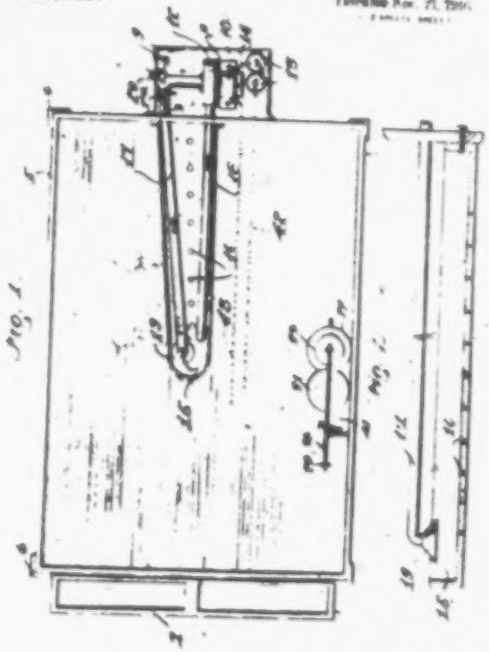
No. 15

1,906,445.



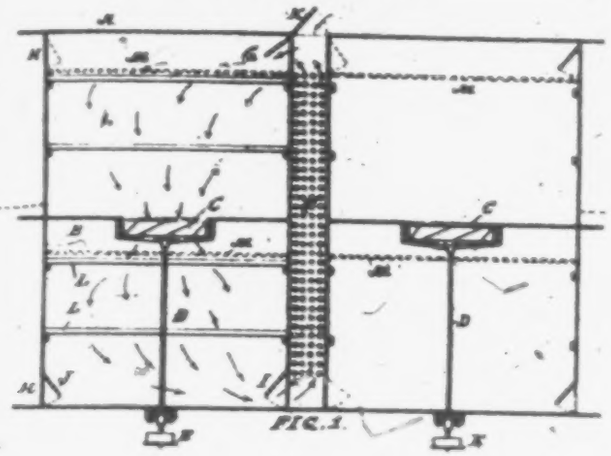
No. 16

906,445.



No. 17
GARDNER
BRITISH PATENT 10,288
1887

No. 18
PROCTOR & KNOWLES
432,282 JULY 15, 1890
DRYING MACHINE



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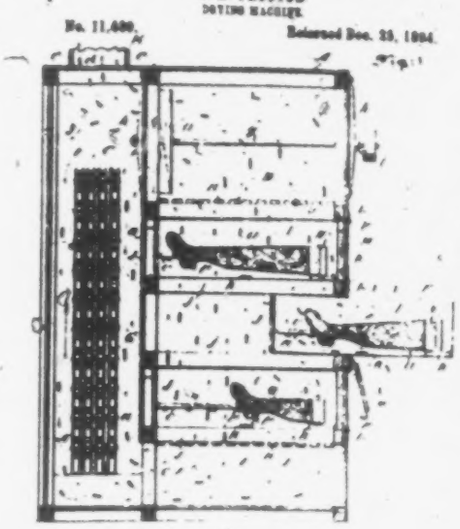
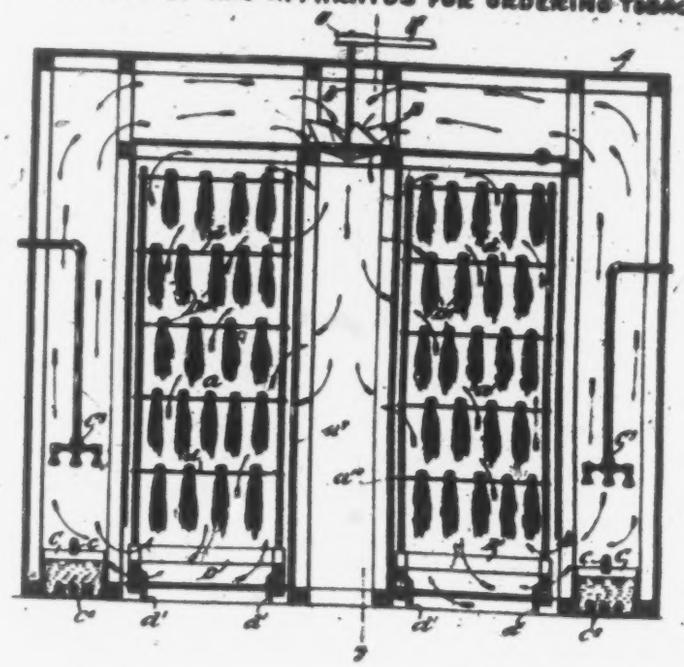


1509
Def. Ex. 59
No. 20
SCHWARTZ
535,175 MARCH 5, 1895
METHOD OF AND APPARATUS FOR ORDERING TOBACCO



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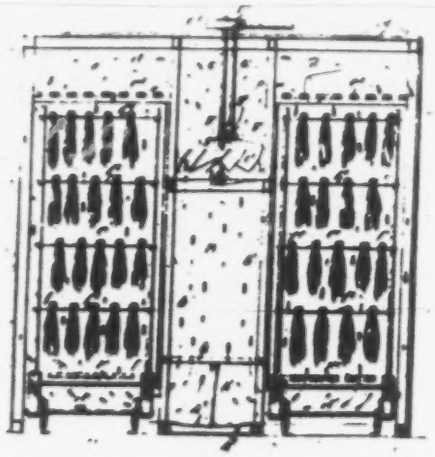
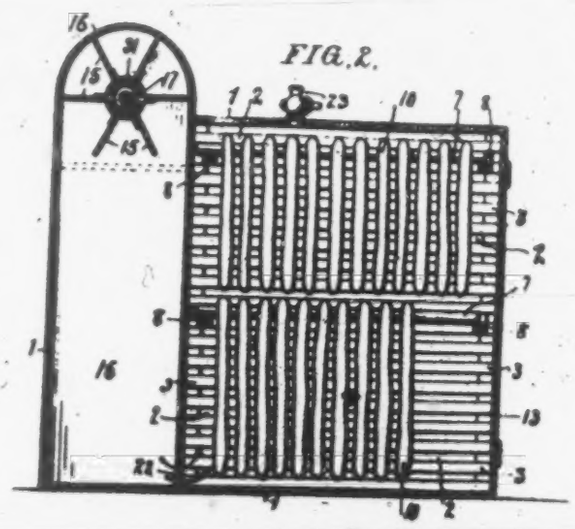
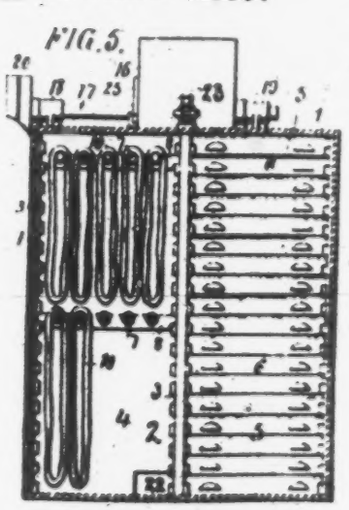
No. 22



No. 23
VERNA
891,019 JUNE 16, 1908
DRYING ROOM



No. 24
VERNA
891,019 JUNE 16, 1908
DRYING ROOM



DEF. EX. 59
page 4

No. 25

T. B. FREAR.

HEATING SYSTEM FOR CONSTANT TEMPERATURE BATHS.

APPLICATION FILED DEC. 12, 1913.

1,165,958. Patented Dec. 28, 1915.

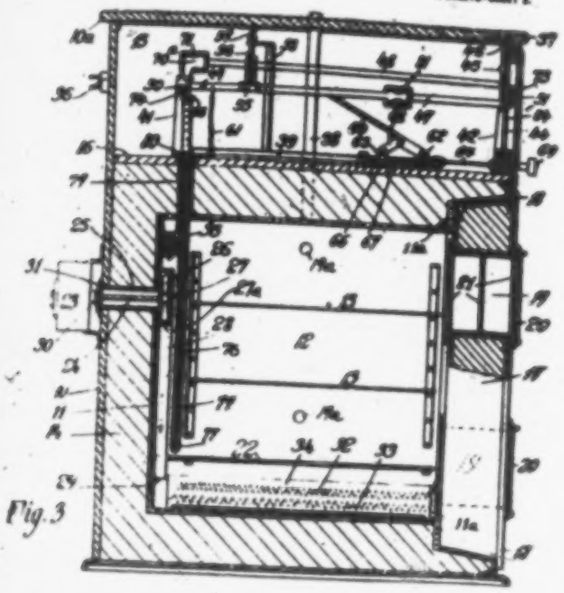


Fig. 3

No. 26

J. SCHMIDT & E. SCHÜTTERLE.

APPARATUS FOR DRYING MACARONI AND LIKE BAKERY PRODUCTS.

APPLICATION FILED JUNE 5, 1911.

1,010,809. Patented Dec. 5, 1911.

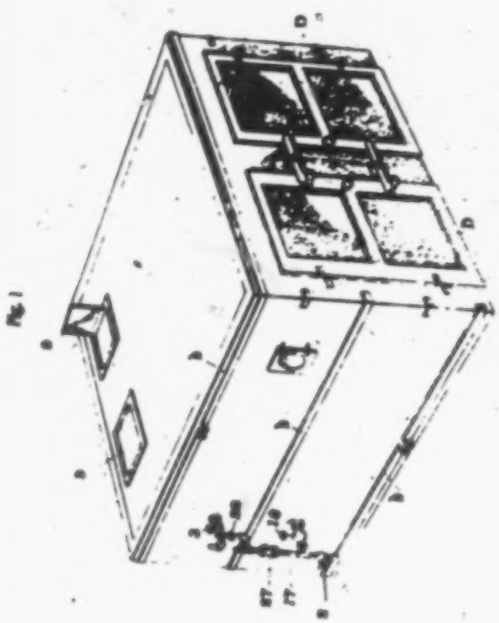


Fig. 1

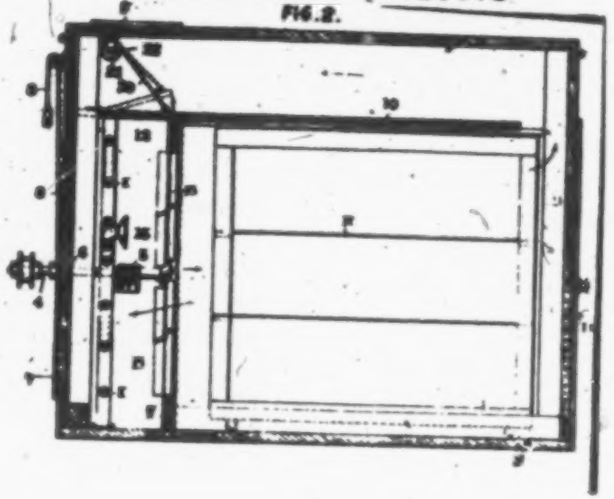
No. 27

SCHMIDT & SCHÜTTERLE

1,010,809 DEC. 5, 1911

APPARATUS FOR DRYING MACARONI AND LIKE BAKERY PRODUCTS

FIG. 2.



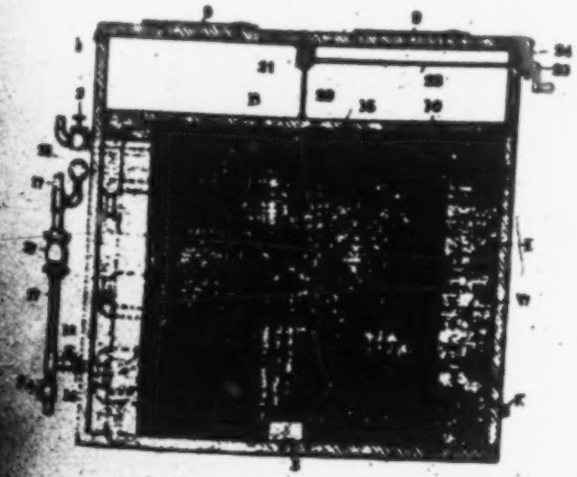
No. 28

SCHMIDT & SCHÜTTERLE

1,010,809 DEC. 5, 1911

APPARATUS FOR DRYING MACARONI AND LIKE BAKERY PRODUCTS

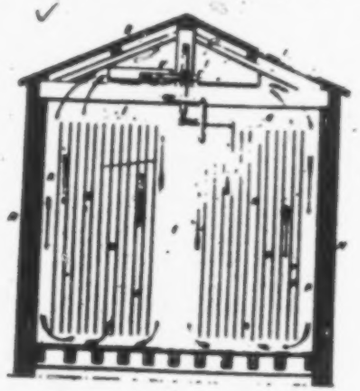
Fig. 3



No. 29

G. LUMPP

Patented July 1913



No. 30.

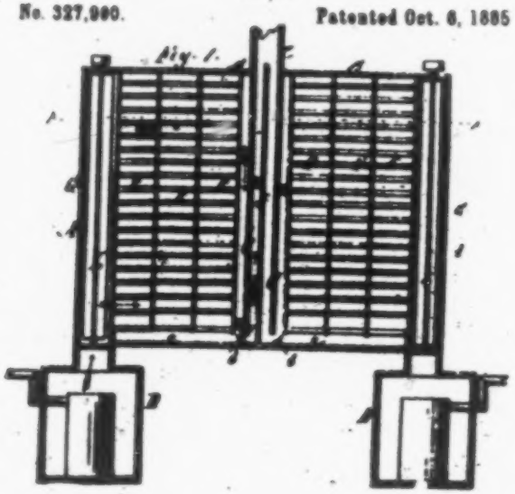
(No Model.)

W. H. ROGERS.

DRIER.

No. 327,990. Patented Oct. 6, 1885

Fig. 1.

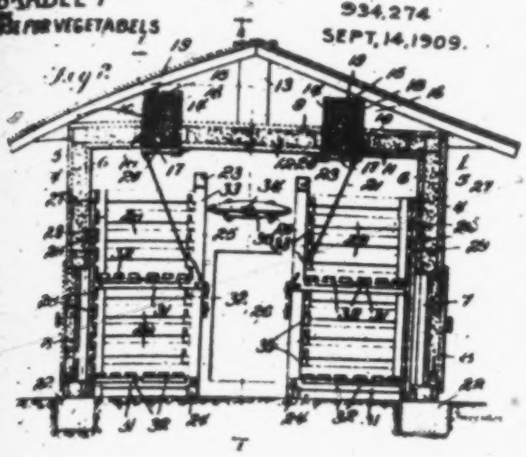


1511

No. 31

BRADLEY
STRUCTURE FOR VEGETABLES

934,274
SEPT. 14, 1909.



No. 32

G. E. GOLDSTEIN.
APPARATUS FOR CURING OR ARTIFICIALLY AGING CIGARS.
APPLICATION FILED JUNE 20, 1914.

1,187,752.

Patented May 4, 1915.

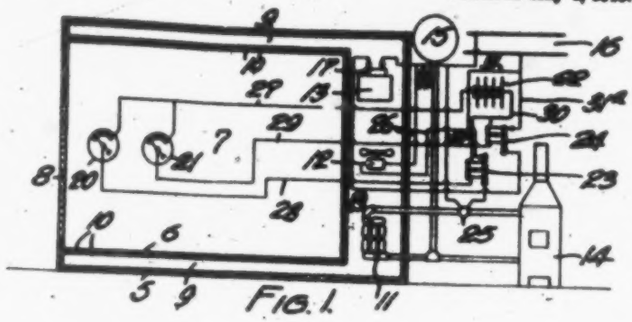


FIG. 1.

NO. 33
GOLDSTEIN

DEF. EX. 59
page 8

1,137,752
APPARATUS FOR CURING
OR ARTIFICALLY AGING CIGARS

MAY 4, 1915
APPLICATION FILED
JUNE 20, 1914

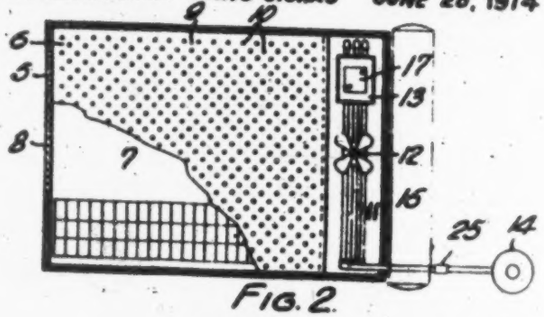


FIG. 2.

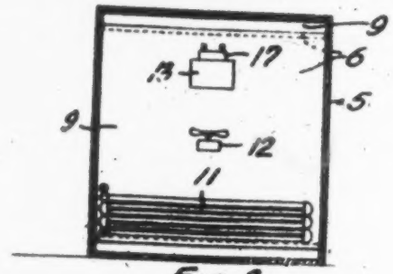


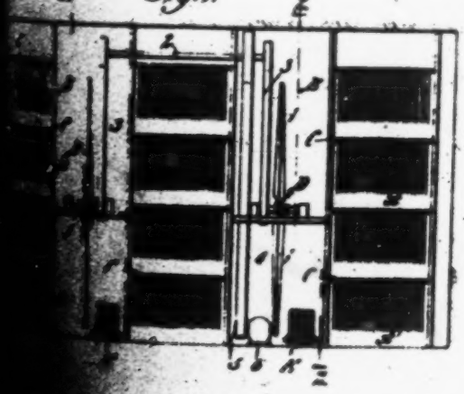
FIG. 3

No. 34

S. VIVIANO
APPARATUS FOR DRYING MACARONI, SPAGHETTI, AND SIMILAR FOODS.
APPLICATION FILED AUG. 22, 1917

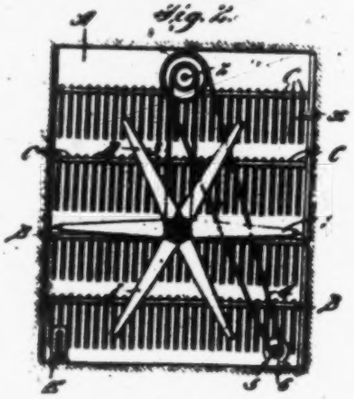
Patented July 2, 1918

Fig. 1.



No. 35
VIVIANO
1,270,800 JULY 2, 1918
APPARATUS FOR DRYING
MACARONI, SPAGHETTI
AND SIMILAR FOODS

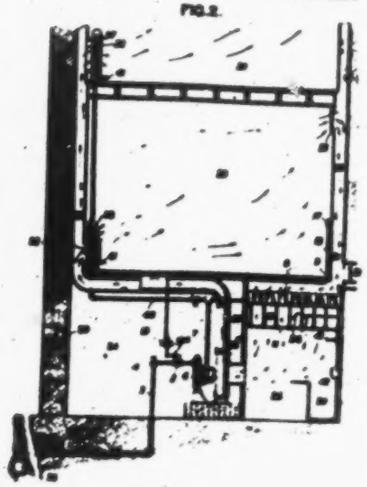
Fig. 2.



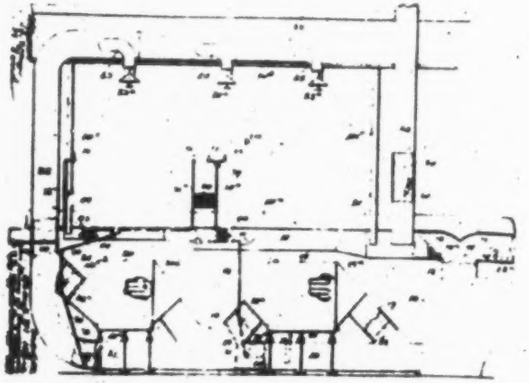
No. 36

917,488.

FIG. 2.



No. 37
PETERS ET AL.
843,909 FEB. 12, 1907
ATMOSPHERE REGULATING SYSTEM



1512

Def. Ex. 59 page 6

No. 38

T. B. FREAS.

HEATING SYSTEM FOR CONSTANT TEMPERATURE BATHS.

APPLICATION FILED MAR. 17, 1913.

1,165,958.

Patented Dec. 28, 1915.

4 SHEETS—SHEET 2.

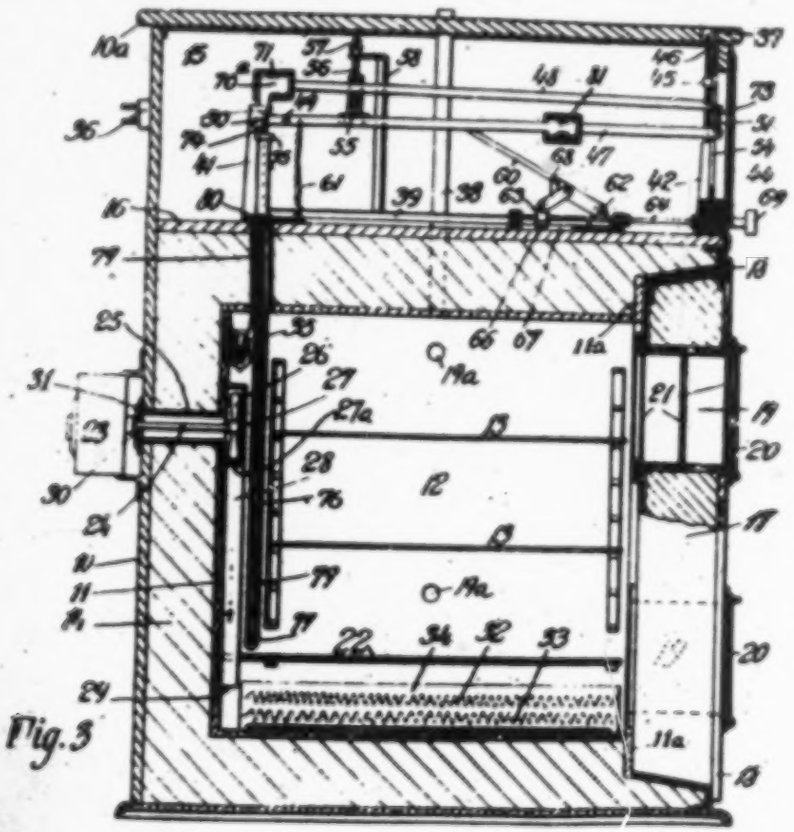
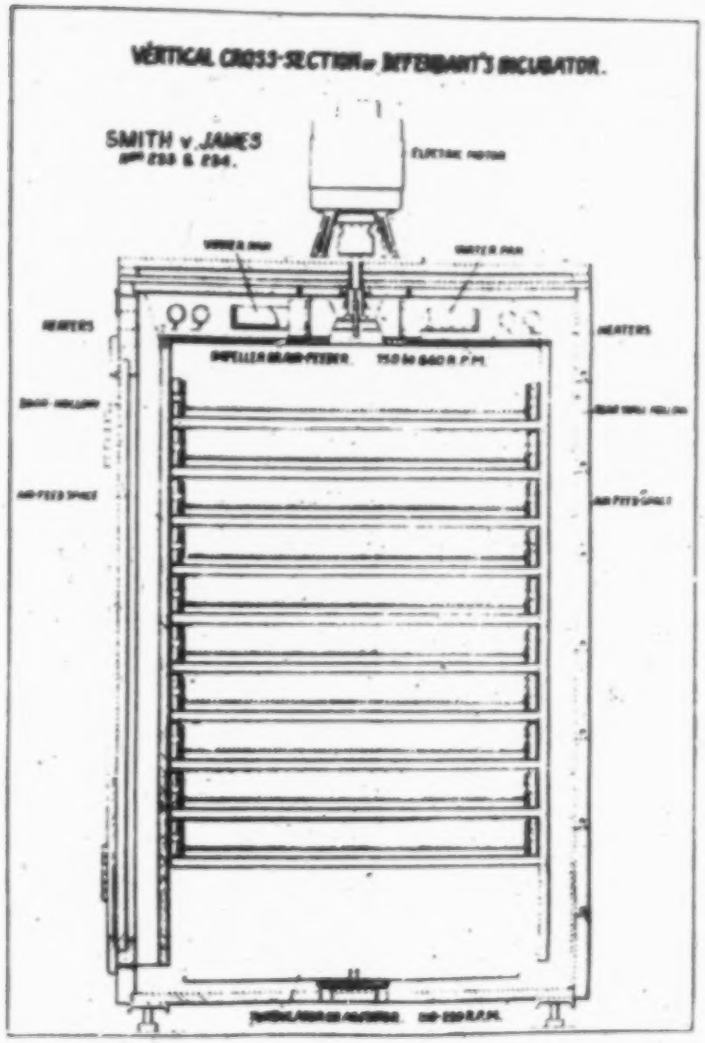


Fig. 3

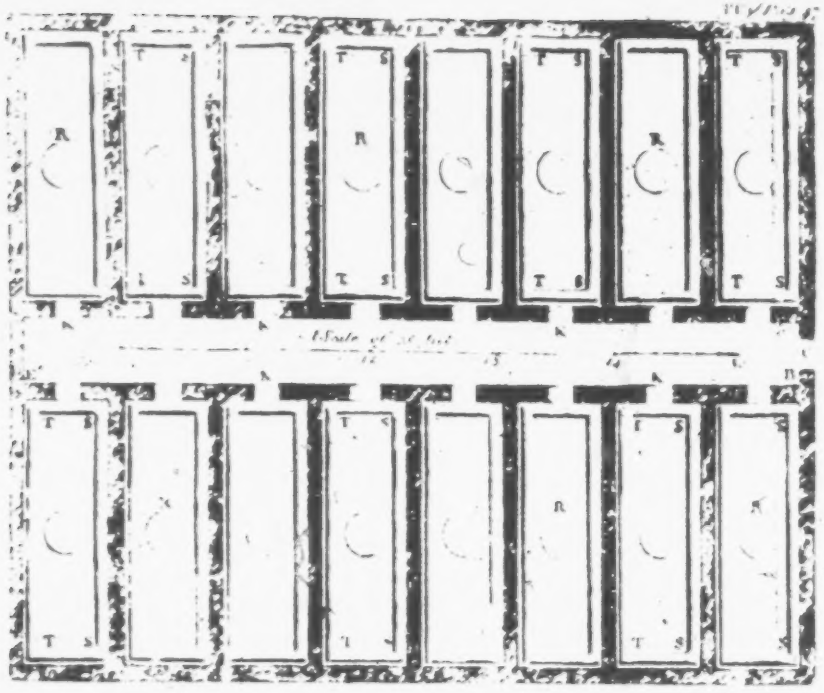
No. 39



1513
DEF. EX. 69
page 7

FROM THE ART
OF
HATCHING AND BRINGING UP DOMESTIC FOWLS &c.
BY DE REAUMUR 1750

No. 40



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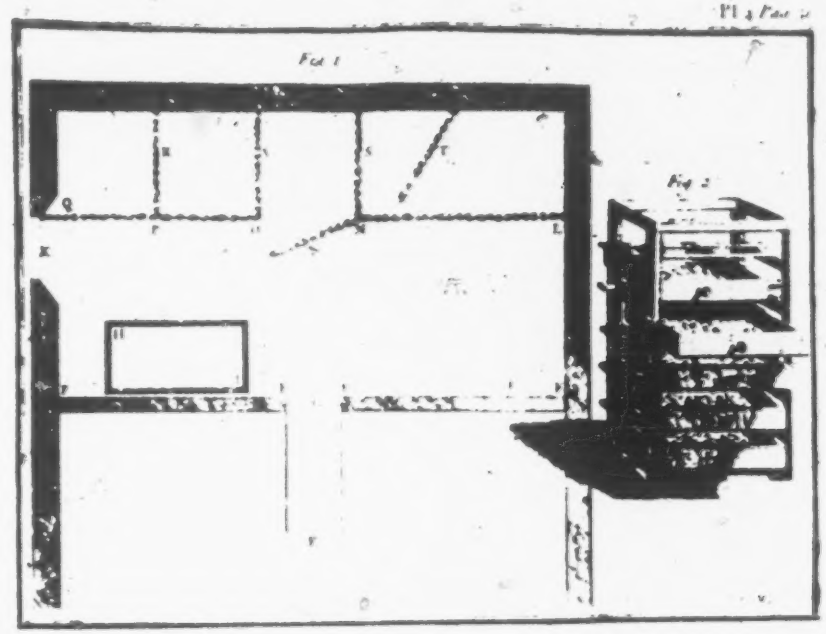
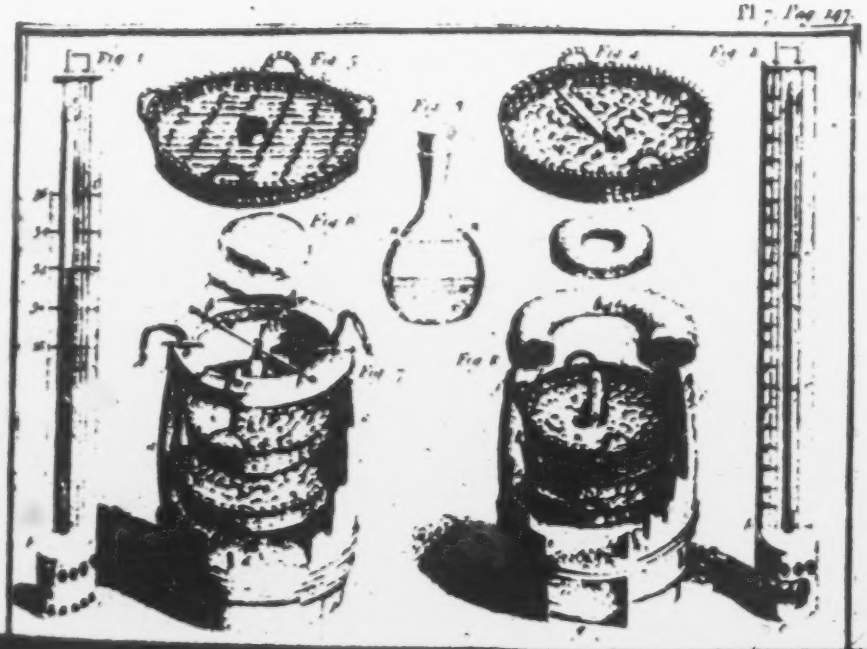


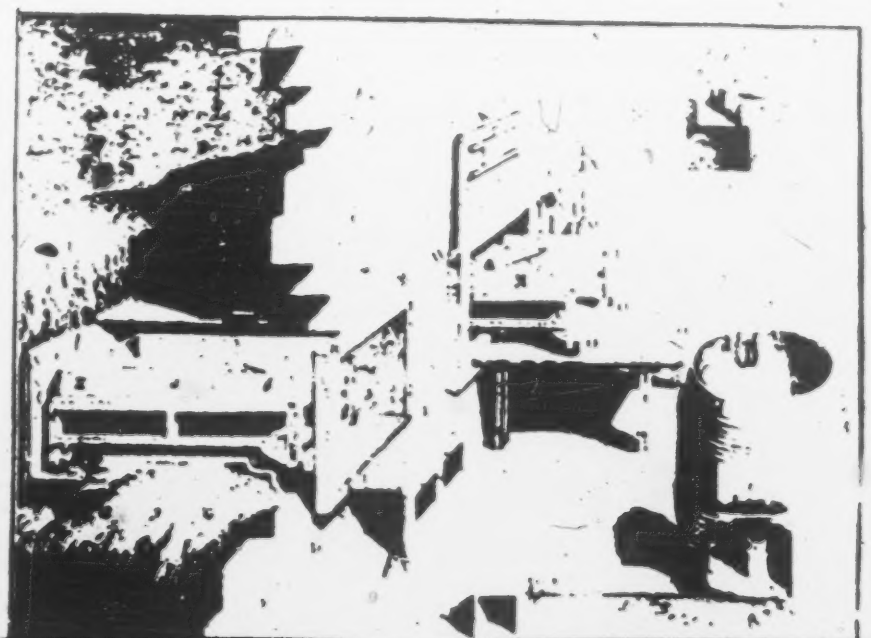
No. 42
PAGE 130

I have often introduced [illegible] the ovens for twenty days running, [illegible] the date of its introduction; [illegible] of the oven was not as yet [illegible], or when he had not been [illegible], he has happened to let the heat [illegible] degrees, on the day before that at [illegible] the chickens of the first eggs were to be [illegible]. [illegible] of this accident have [illegible] as I had expected they [illegible] two or three or four days, [illegible] not one chicken has [illegible] I found those which ought to have [illegible] days, dead in their shells: but [illegible] days there succeeded others which [illegible] to be pleased with; every thing [illegible] again, and there have been [illegible] many chickens hatched every [illegible] have been if the heat of the [illegible] within the requisite bounds.

No. 43



No. 44



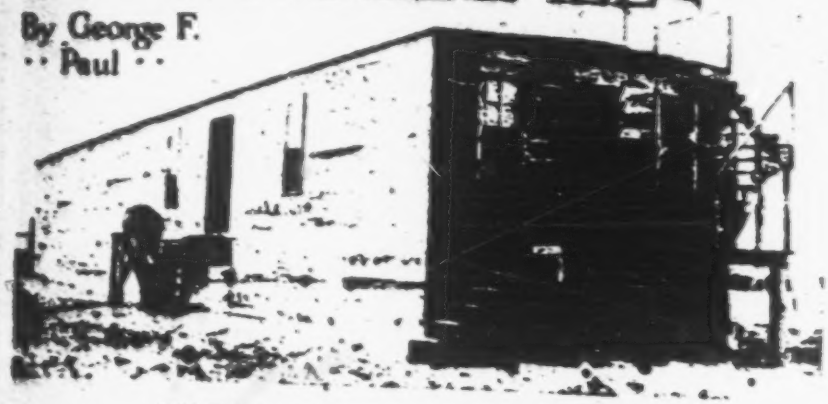
TECHNICAL WORLD MAGAZINE
APRIL 1913 PAGES 248, 249

1219

No. 45

HATCHING CHICKENS BY WHOLESALE

By George F. Paul



THE 150,000 EGG HATCHERY AT PORT CONNOR, TEXAS
The remarkable feature of this building is its smallness as contrasted with its capacity.

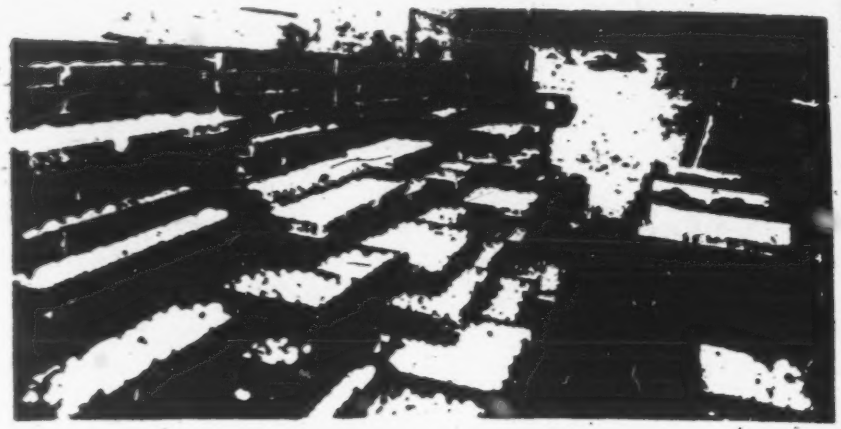
THERE is now in operation at Port O'Connor, Texas, a machine that is capable of turning out a chicken every twelve seconds for twenty-four hours a day, and for three hundred and sixty-five days in a year. This mammoth hatchery is the third of its type built by the inventor, who was formerly a poultry expert for the Government. It is the second largest hatching establishment in the world, being slightly exceeded in capacity by a hatchery at Petaluma, California, which holds 165,000 eggs as against 150,000 in the Texas machine.

The most remarkable feature of the plant is the fact that all the eggs [illegible] with room for candling, chick [illegible] and all engines, fans, and equipment, but a single floor sixteen [illegible] feet. Furnished with common [illegible], such a room would have just [illegible] same capacity in three weeks [illegible] hens in a single day.

[illegible] economy of space and [illegible] by placing the eggs in [illegible] boxes like the type cases in [illegible] case rack, or the trays in a [illegible]. This idea has been tried before but was not a success on account of the hot air rising. In the present instance, this difficulty is overcome by forcing a continual current of air from a centrifugal fan through the hatching chamber, which serves to keep it at an even temperature throughout. While this is quite an item of expense and would not pay with a small machine, yet in a big plant it is paid for several times over by the saving of the duplication of the small machines, as well as by the economy of the fuel and labor.

One of the unique improvements in the Texas plant is a turning system, by which compartments holding 10,000 eggs are swung on a pivot and the eggs turned by inverting the entire compartment. This enables one man to turn 100,000 eggs in less than two minutes. These eggs are ventilated and maintained at an equal temperature by an eight hundred pound centrifugal fan, requiring four horsepower to operate it, and the temperature is regulated to a tenth of one degree, while water sprays regulate the moisture to a similar nicety.

The eggs are not candled from the time they enter the hatchery until they leave.



SOME OF THE TRAYS OF EGGS

the inventor believing that cooling is injurious. The eggs need be handled but three times: first, when put into the machine; second, when tested; third, when the chicks are taken off and boxed for shipment. With such a plant one man can do the work of five men running small incubators, or of ten thousand setting hens.

The most obvious question asked by the visitors at the plant is, "Where will you get the eggs?" The reply is that they will be purchased from the larger poultry breeders throughout the Southern and Middle Western States. These breeders will ship in case lots at much lower rates for eggs and for transportation than is the case of the petty sales of one or two settings. Thus the hatchery becomes the quickest and cheapest way to stock up a new country with pure bred poultry. If pure bred eggs cannot be secured in sufficient quantities, huckster wagons will be sent through the heavy egg-producing districts in the counties to the north. Lavaca is the banner poultry county of Texas.

A 30,000-egg hatchery built last year in Oklahoma was filled by March first and thereafter turned eggs away. This plant shipped chicks through a radius of five hundred miles. Many of the Eastern poultry plants ship chickens to practically every State in the Union and the plants on the Pacific coast ship as far east as Colorado. The manager of the Port O'Connor plant expects to confine his business to Texas, which is today one of the best markets known for baby chicks and is so far removed from the other large hatcheries that the expense and losses in shipping prove a serious handicap.

Inexperienced people ordinarily expect better results from artificial incubation than are secured in actual practice. This is perhaps due to the advertisements of some incubator manufacturers. Farm eggs sent to the hatchery run from fifty to seventy-five per cent hatches of all eggs entered. City-bred stock varies greatly. Occasional lots of Leghorn eggs hatch upwards of eighty per cent. Eggs from heavy breeds are often at the opposite extreme and in some instances eggs are sent to the hatchery that fail to produce a chick.

Custom handling for poultry fanciers is likely to be unsatisfactory. The chief business of the hatchery will be that of producing baby chicks for outside sale and hatching eggs for local commercial poultry growers.

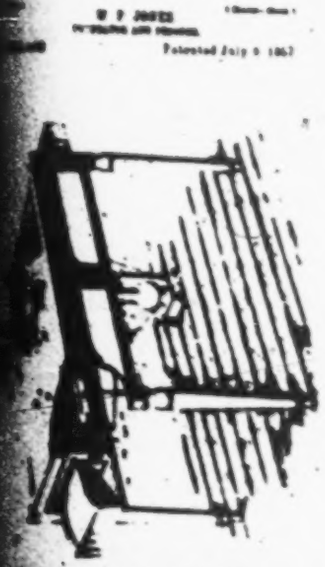
The local promoters hope by the help of this giant hatchery to build up a poultry community on the Texas coast very much like those hatcheries of California where, in some localities, notably Petaluma, poultry raising is the chief industry and has proved very profitable, incomes of as high as three thousand dollars a year being made off of ten acres.

INCUBATOR PATENT SUED ON IN JONES V CYPHERS, 126 F. 753 2ND C.C.A.

1516

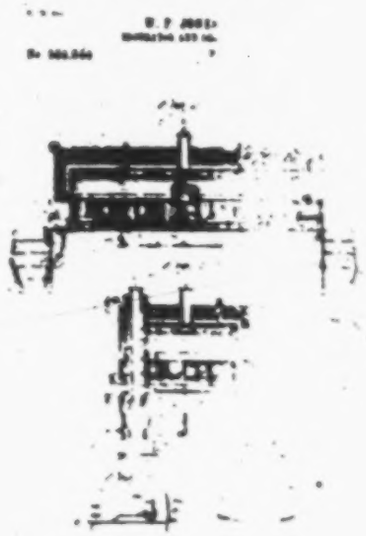
DEF. EX. 59
pg 4 10

No. 47



2ND C.C.A. HELD
TION IN JONES OVER

No. 48



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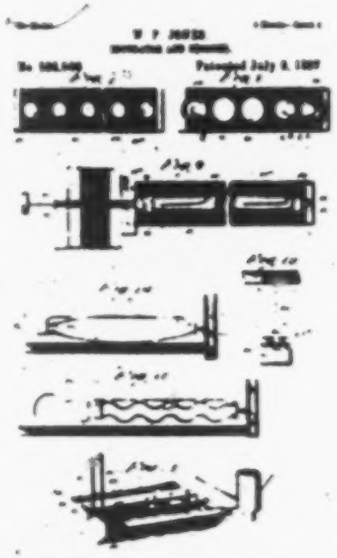

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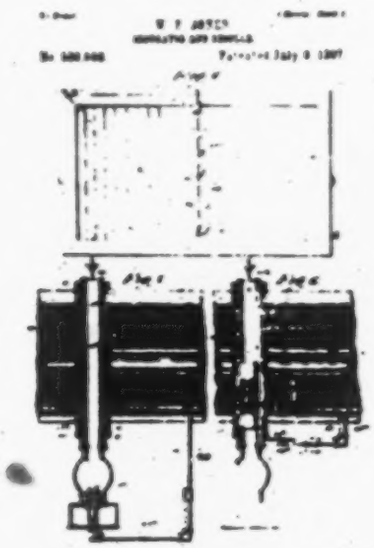
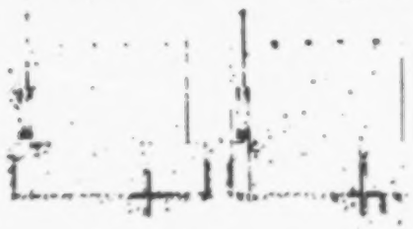


CLAIM 1 OF JONES PATENT 526,888

1. AN INCUBATOR OR BROODER COMPRISING A CLOSED CHAMBER HAVING A FRESH-AIR INLET, MEANS FOR HEATING THE CHAMBER, INCLUDING A HEATING DEVICE AND AN EXIT-PIPE CONNECTING SAID CHAMBER WITH THE HEATING DEVICE WHEREBY OWING TO THE DRAFT CAUSED BY SUCH HEATING DEVICE A POSITIVE CIRCULATION OF AIR WITHIN THE INCUBATOR OR BROODER IS PRODUCED SUBSTANTIALLY IN THE MANNER DESCRIBED.

No. 52
VAN DER HEYDEN
504,544 SEPT. 5, 1893



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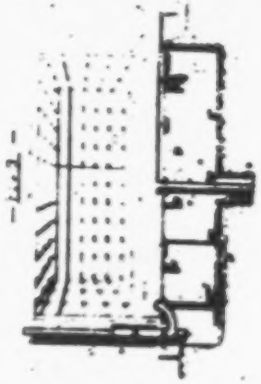

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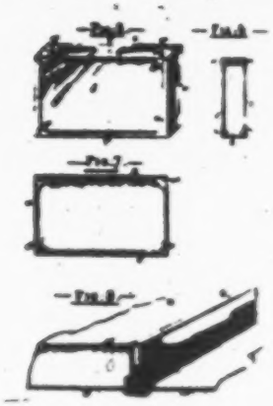
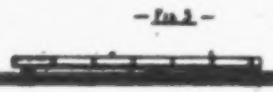


2ND C.C.A. HELD NO INVENTION IN JONES OVER VAN DER HEYDEN

No. 55

No. 56



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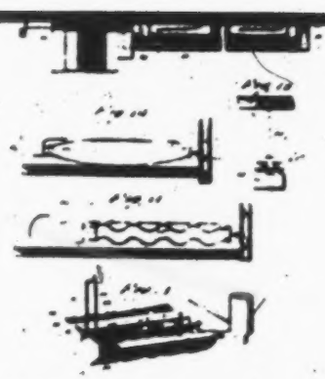
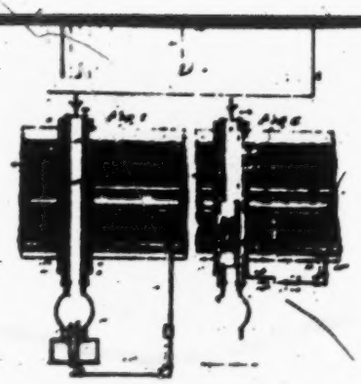


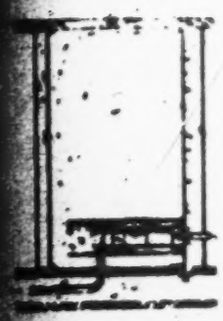


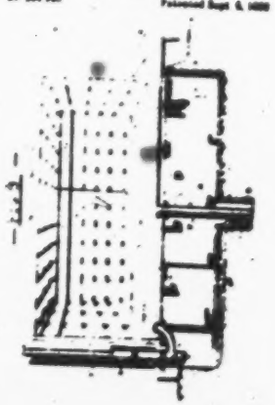
...D. C.C.A. HELD
...TION IN JONES OVER

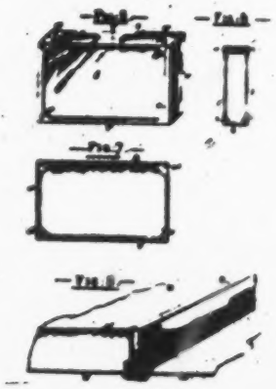
No. 52
VAN DER HEYDEN
504,544 SEPT. 5, 1893

No. 53

No. 54







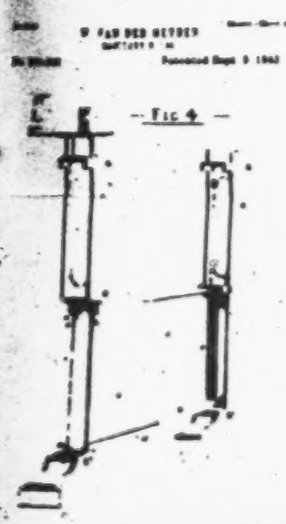
2ND. C.C.A. HELD NO INVENTION IN JONES OVER VAN DER HEYDEN

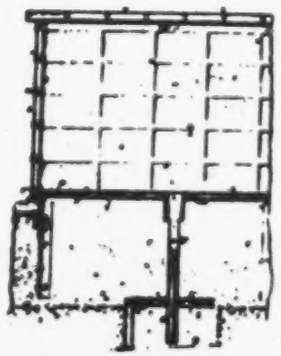
No. 55

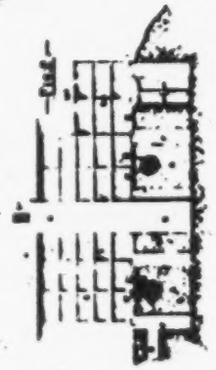
No. 56

No. 57

No. 58







2ND. C.C.A. HELD JONES INCUBATOR PATENT AND VENTILATOR PATENTS
OF SCHULZE AND VAN DER HEYDEN BELONG TO SAME ART.
ALSO HELD NO PATENTABLE INVENTION IN APPLYING SHULZE AND VAN DER HEYDEN VENTILATING DEVICES TO INCUBATOR.

...SPECIFY OWING TO THE DRAFT CAUSED BY SUCH HEATING DEVICE A POSITIVE CIRCULATION OF AIR WITHIN THE INCUBATOR OR BROODER IS PRODUCED SUBSTANTIALLY IN THE MANNER DESCRIBED.

DEFENDANT S' EXHIBIT No. 66

1222

STUDIES IN TRANSMISSION OF BACILLARY WHITE DIARRHEA IN INCUBATORS

By W. R. Hinshaw, C. W. Upp and J. M. Moore

Departments of Bacteriology and Poultry Husbandry, Kansas Agricultural Experiment Station, cooperating, Manhattan, Kansas

Introduction

A large number of inquiries concerning incubators, as a possible means of disseminating bacillary white diarrhea infection of chicks, led us to study this problem. A thorough search of the literature on the subject revealed no articles dealing with experiments on transmissibility in the incubator. Jones[3] was successful in isolating *S. pullora* from the inner shell membrane of eggs containing dead embryos and suggested incubator infection of chicks by their picking at egg-shells, infected droppings, etc. Rettger, Kirkpatrick and Stoneburn,[4] Durant,[2] Steiner,[5] and many other investigators refer to the possibility of incubator infection. As preventives they advise darkened hatching-trays at the time of hatching and thorough cleaning and disinfection after each hatch.

The continual circulation of chick-down in the forced-air-draught type of machine, at the time of hatching, suggested a possible means of dissemination. If a tray of chicks from an infected flock were hatching in the same incubator as trays from non-infected flocks, would it not be possible for the down from these infected chicks to carry infection to non-infected chicks? This is the problem that we proposed to study.

There are many phases to this problem and before satisfactory conclusions can be made all of these phases must be worked out. In this paper, we wish to dwell upon our preliminary studies of a few of them. These are: (1) the bacteriology of incubators, (2) *S. pullora* infection of chicks through the nostrils, and (3) artificial dissemination of *S. pullora* infection in incubators.

Bacteriology of Incubators

We made a qualitative study of the bacteriology of three forced-air-draught type incubators and one sectional type. We then made quantitative studies, and the results of these studies

Contribution No. 70 from Department of Bacteriology and No. 21 from Department of Poultry Husbandry. Received for publication, November 25, 1922.

will be published in another paper. We found that after each hatch there was a direct relationship between the time of incubation and the number of organisms (in a machine of the forced-air-draught type). After thoroughly cleaning and disinfecting the incubator, we obtained very few organisms. However, as soon as the chicks began to hatch, the number of organisms greatly increased until the chicks were removed. This was not true of the sectional type of machine, where the number remained approximately the same throughout the period of incubation, although at the time of hatching the flora changed to the same as that observed in the forced-air-draught type of machines.

The organisms found to cause this increase at hatching time were of two fecal types. Therefore, if it is possible to get an increase in fecal types of bacteria, it would seem logical to assume that *S. pullora*, which causes bacillary white diarrhea, might also be spread by the chick-down. In our early experiments with a machine which was hatching infected chicks, we were unable to isolate *S. pullora*. Later, in an artificially infected machine, we isolated this organism on three occasions, by exposing agar plates for one minute in various parts of the incubator.

Infection of Chicks Through the Nostrils

Our next step was to determine if chicks might be infected through the nostrils. The following experiment was made to ascertain this. Twenty half-day-old chicks were obtained from a flock free from bacillary white diarrhea. These were divided into three lots. Two lots were treated with pooled, 24-hour, broth cultures of six strains of *S. pullora*, and the third left untreated for controls.

Table I.—*Summary of autopsy results on chicks dying from artificial infection through the nostril*

Lot	1		2		3	
History	Inforted by swabbing nostrils with 24-hr. cultures of *S. pullora*		Inferted by injecting one drop of culture into nostrils		Controls	
Total number	3		7		11	
	No.	%	No.	%	No.	%
Died—b. w. d.	2	66.6	7	100.0	1	9.1
Died—other causes	1	33.3	0	0.0	7	63.6

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Lots 1 and 2 received treatment on two successive days. All lots were placed in a brooder and kept separate by means of a board partition. The summary of the results of the experiment is given in table I.

An examination of the records leaves no doubt that the chicks were infected by injecting a pooled culture of *S. pullora* into their nostrils. Nine, or 90 per cent of the chicks which were infected, died from bacillary white diarrhea. One chick of the control lot died from bacillary white diarrhea. As the chicks were from tested stock, this was probably due to infection from the treated lot, which was kept very near the check lot and the same attendant cared for both lots. Overheating is probably the cause of the death of the seven other controls, since the temperature increased several degrees above normal one day during the time the chicks were observed.

Dissemination of Bacillary White Diarrhea in the Incubator

After killing chicks by infection through the nostrils, we decided to try infection in incubators, and the following results of experiments are self-explanatory. A forced-air-draught, 2000-egg-capacity type of machine was used for all phases of this preliminary work, and it was thoroughly cleaned and disinfected after each hatch. Eggs set were from a flock free from bacillary white diarrhea. Controls were not kept in all cases, since records of livability on the 2438 chicks hatched from this flock, over a period of six months, were better than 90 per cent. The average hatchability of the 3505 eggs set from this same flock, over the same period, was 68.4 per cent. Furthermore, they hatched from eggs laid by non-carriers.

Experiment I. Transmission by infected down: The object of this test was to ascertain if chicks hatching in a forced-air-draught incubator could contract bacillary white diarrhea if the organisms were artificially present in that part or another part of the machine. The idea was that the forced circulation of air might carry the organism from one part of the machine to another, on down or any other material that might be present.

Some chick-down was taken from an incubator, sterilized and treated with 24-hour, broth cultures of six strains of *S. pullora*. This down was air-dried and placed in the incubator on the lowest egg-tray (the one closest to the hatching-trays in left compartment of the incubator). There were about 100 chicks

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clients buy eggs from tested flocks only and (2) by carefully cleaning and disinfecting incubators after each hatch. Custom eggs should not be hatched with eggs intended for hatching commercial chicks, unless it is known that the eggs come from tested flocks.

Conclusion

In conclusion we wish to state:

1. That bacillary white diarrhea was disseminated by artificially infected chick-down, placed in a forced-air-draught-type incubator.

2. That chicks hatching in the compartment opposite to the one in which infected down was spread did not suffer as high a per cent mortality as chicks hatching in the infected compartment.

3. That similar results were obtained by infecting the down of hatching chicks and exposing healthy chicks to the down which might be carried from the infected chicks to the non-infected.

References

(Brunett, E. L.: Bacillary white diarrhea. Fatal septicemia of chicks. Cornell Vet., xv (1925), 3, pp. 308-314.
(Durand, A. J.: Bacillary white diarrhea. Univ. Mo. Agr. Exp. Sta. Cir. 83.
(Jones, F. S.: Fatal septicemia or bacillary white diarrhea in young chickens. Ann. Rpt. N. Y. State Vet. Col., 1910, pp. 111-139.
(Rettger, L. F., Kirkpatrick, Wm. F., & Jones, R. E.: Bacillary white diarrhea of young chicks. Storrs Agr. Exp. Sta. Bul. 77 (1914).
(Stuart, A. J.: Bacillary white diarrhea. Ky. Agr. Exp. Sta. Cir. 33.

DR. MILLER TO BUREAU OF DAIRYING

Dr. F. W. Miller has been appointed as veterinarian and physiologist in connection with the breeding research at the five experiment farms in which the Bureau of Dairying is interested. These are at Beltsville, Md.; Ardmore, N. Dak.; Huntley, Mont.; Woodward, Okla.; and Jeanerette, La. He will have supervision of the health of the herds at these places, with special reference to treatment for sterility; and will make anatomical studies with reference to the relation for conformation to milk production, and the physiology of milk production and reproduction in dairy cattle.

Doctor Miller was graduated in 1916 from Ohio State University, where he studied under and was a student assistant of Doctor Sisson. After graduation he went to the Oregon Agricultural College, as instructor in veterinary science and did research work in connection with the control of abortion and sterility. He has had wide experience in veterinary practice among the high-producing herds in the Willamette Valley. During the war he was in the army as a member of the Medical Corps.

1520

DEFENDANT S' EXHIBIT No. 67

SUMMARY

The disease, bacillary white diarrhea, is very prevalent in all parts of the country where studies have been made for its detection. This does not mean that every flock is infected, but from a general survey it means that about 75 per cent are suffering from this trouble. The disease affects both adult fowl and chicks. While greater attention has been drawn to the disease because of losses to chicks, there are probably also heavy losses of adults and losses due to low productivity and low fertility and hatchability of infected eggs.

The organisms are carried from generation to generation largely in the bodies of birds which suffered from the disease as chicks, but which recovered and continued to harbor the organism after reaching the period of production. The organism is then passed off in the egg to infect the embryo or newly hatched chicks. This infection of the ovary of the producing hen reduces productivity, fertility, and hatchability. After hatching, the infected chicks spread the disease widely to noninfected chicks through the dust of the incubator, through droppings, and by contaminating the ground, litter, and feeding and water utensils by their infected excreta.

The amount of actual money loss due to these birds is difficult to determine because of the confusion which exists concerning the cause of death in fowl. An accurate diagnosis of chick diseases is impossible outside a research laboratory. Numerous other causes of death produce clinical symptoms and pathological changes almost identical with those caused by *S. pullorum* infection. Thus, it is necessary to develop a method for correct differential diagnosis of various diseases before adequate data can be collected to determine this point.

There has been devised no adequate method of treatment for this disease. The only method of control consists of three steps: (1) The testing of the serum of all birds in the flock by means of the agglutination test; (2) the elimination of all reactors from the flock immediately after they are discovered; and (3) the careful use of strict sanitary measures for the runs, houses, and drinking and feeding utensils.

The data collected in this investigation indicate that a large per cent of infection may take place after birds have matured. The infectious material may be transferred through feeding and drink-

1227

THE INCUBATOR AS A SOURCE OF INFECTION

A large number of inquiries concerning incubators as a possible means of spreading bacillary white diarrhea, led the writers to study this problem. The complete report of the experiments on such dissemination has been published (Hinshaw, Upp, and Moore, 1926). A few observations and the preliminary results of this study, however, are presented herewith.

In a study of the bacteriology of various types of incubators, it was found that the bacterial content of the air in the forced-air-draft type of incubator increased very markedly at hatching time. This increase is due to two fecal types of bacteria that disappear upon cleaning and disinfection of the incubator and reappear at hatching time. These facts pointed to a possibility of a similar spread of *S. pullorum*, if infected chicks were present.

To prove that infectious material can be spread throughout the incubator, sterile chick down was saturated with a 24-hour culture of *S. pullorum*, and then air dried. This dried infected down was placed in a compartment of a forced-air-draft incubator just as the chicks were starting to hatch. Seventy-five controls were removed before the down was placed in the incubator and the remainder of the chicks, which were just hatching, left in the incubator for 38 hours. A total of 117 chicks hatched and were placed on a cleaned and disinfected room which had never been used for the brooding of chicks. None of the controls died from bacillary white diarrhea while 33, or 28.2 per cent, of the exposed chicks died from this disease.

In three other experiments, chicks were infected by saturating their bodies with *S. pullorum* culture as soon as the eggs were pipped, or immediately after hatching. These infected chicks were used to supply a source of infected down and normal chicks exposed to these in each compartment of the incubator. The summary of the results of these experiments is given in Table XV.

In the three experiments 316 chicks were under observation; 151 of these were either artificially infected or exposed to chicks artificially infected in the same compartment of the incubator; 140 were exposed to the artificially infected chicks but in the opposite end of the incubator. The 25 controls were not exposed, and were hatched in a cleaned and disinfected machine. Higher per cent mortality was observed in chicks exposed in the infected compartment of the machine than in the chicks exposed in the noninfected compartment. This was also true in the experiment where

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chicks were exposed to infected down. Therefore, it seems that there is greater chance of incubator dissemination where normal chicks are in close quarters with the infected ones.

TABLE XV.—Summary of results obtained in transmission of bacillary white diarrhœa in incubators.

TREATMENT	Total number of chicks.	Total dying.		Total dying from bacillary white diarrhœa.		Total dying from other causes.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Chicks hatching in infected compartment of incubator	151	102	67.55	90	59.6	12	7.9
Chicks hatching in noninfected compartment but exposed to infected compartment	140	43	30.71	38	27.14	5	3.6
Controls	25	7	28.0	(a)	00	7	28.0

The results given in this article suggests a source of bacillary white diarrhœa dissemination not reported previously. However, since small numbers are involved, the experiments should be repeated, using larger numbers of chicks and better controls. Chicks from naturally infected eggs should also be used.

In these preliminary experiments it was impossible to get more than one incubator with which to work, and the only eggs which were available were some which were being hatched for determination of hatchability. All of these were from birds which were negative to the agglutination test for bacillary white diarrhœa, and records of hatchability and livability were available on 3,505 eggs incubated from this flock during a period of six months previous to the time these studies were started. The livability of the 2,438 chicks hatched was over 90 per cent. No outbreaks of bacillary white diarrhœa had occurred in this flock.

In all the experiments reported above, 529 chicks were used and 111 720.98 per cent) of these were controls. Only one control chick died with bacillary white diarrhœa, and this occurred in the first experiment to determine if chicks could be infected through the nostrils. In this case, the infected chicks were separated only by a loose board partition, and infection could easily be carried by the attendant, by mice, or by infected down carried by the air. In contrast to this one (0.9 of 1 per cent) which died of bacillary white diarrhœa in the controls, 170 or 40.68 per cent, of the exposed chicks

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died with the disease. In all of these cases the diagnosis was confirmed by bacteriological examination.

The period of incubation of the disease is from 48 to 72 hours. By a study of results summarized in the experiment where the infection depended entirely upon the chicks getting some of the down or other infective material, it was found that it was four days before the first death occurred in the infected compartment of the machine, and on the ninth day the maximum number of deaths was recorded. After 22 days no more deaths occurred and the chicks appeared normal. With the exception of one instance, no losses from bacillary white diarrhea were experienced in any experiment after the fourteenth day from the date of exposure. In this case the chick died on the twenty-second day.

In a study of the autopsy records, it was found that it takes about 24 hours longer to produce infection in chicks exposed to infective material which is in circulation in the incubator, than in chicks contaminated by saturation of their bodies with *S. pullorum*. Also, chicks infected by saturating their bodies before they break from the shells, die sooner than those treated from 12 to 24 hours after they are out of the shell. The question of how the disease is produced after such infection is a problem which still remains to be solved. Probably, when the culture is injected around the chick in the shell, some of it reaches the digestive tract through the mouth or the allantoic circulation. This may account for the earlier apex of mortality in these chicks than in those infected in the same manner after they are hatched. The infected down may reach either the digestive tract or the respiratory tract through the mouth or nostrils.

The question of whether the chick down, pieces of shell, and droppings from naturally infected chicks are a similar source of dissemination yet remains to be settled. There is no doubt but that fecal organisms spread throughout the incubators of the forced-air-draft type; and since it has been proved that the infected droppings are one of the chief sources of infection, it is logical to assume that *S. pullorum* can be transmitted throughout the machine by the air current. This may also be true with other types of machines. It is planned to report on this phase of the problem later.

One hatcheryman, cooperating with the writers, says that he has seen typical examples of just such infection, but no definite data are available to prove it. One field example has been reported

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DEFENDANT S' EXHIBIT No. 70

Hatching (*after von Baer*). About the fourteenth day the growing embryo accommodates itself to the form of the egg so as to lie parallel to the long axis with its head usually towards the broad end near to the air-chamber. Sometimes, however, the embryo is turned in the reverse position (von Baer). The head is bent towards the breast, and is usually tucked under the right wing. Important changes preparatory to hatching take place on the seventeenth to the nineteenth days. The fluid decreases in the amnion. The neck acquires a double bend so that the head is turned forward, and, in consequence, the beak is towards that part of the membranes next to the air-chamber. The intestine is retracted completely into the body-cavity, and on the nineteenth day the yolk-sac begins to enter the body-cavity. On the twentieth day the yolk-sac is completely included, and practically all the amniotic fluid has disappeared. The chick now occupies practically all the space within the egg, outside of the air-chamber. The umbilicus is closing over. The ductus arteriosi begin to contract, so that more blood flows through the lungs. The external wall of the allantois fused with the chorion still remains very vascular.

Now, if the chick raises its head, the beak readily pierces the membranes and enters the air-chamber. It then begins to breath slowly the contained air; the chick may be heard, in some cases, to peep within the shell two days before hatching, a sure sign that breathing has begun. But the circulation in the allantois is still maintained and it still preserves its respiratory function. When the chick makes the first small opening in the shell, which usually takes place on the twentieth day, it begins to breathe normally, and then the allantois begins to dry up and the circulation in it rapidly ceases. It then becomes separated from the umbilicus, and the remainder of the act of hatching is completed, usually on the twenty-first day.

DEFENDANT'S EXHIBIT No. 73

REPORT OF HATCH OF SEPT. 16, 1930

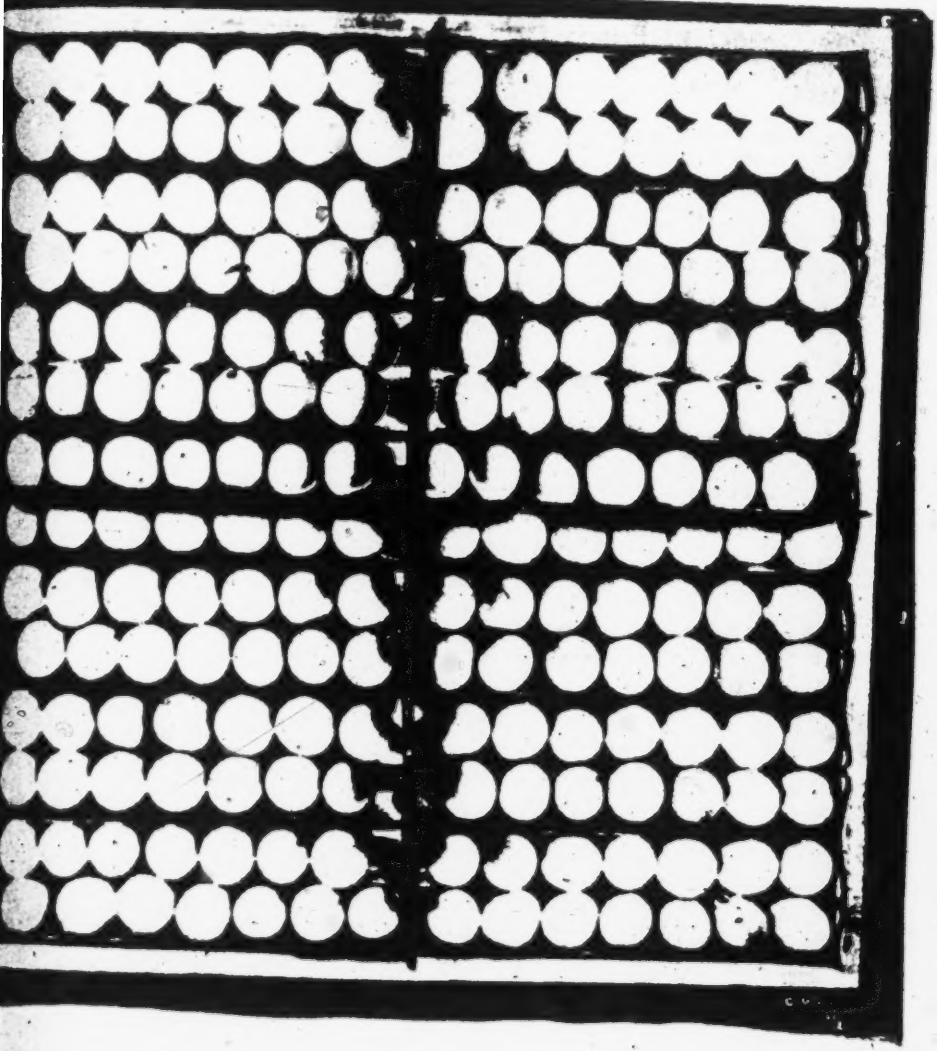
Tray No. C6C
(Identified by photos showing tray numbered C6C, C6C-2, C6C-3)

Set August 25 10:30 A.M.
Chicks taken off September 16. 10:40 A.M.
Position in cabinet: Fourth tray from top

Turbulator running

No. of eggs set	196	
" " infertile eggs	36	
" " dead germs and chicks that failed to get out	24	50
" " chicks hatched		146
	196	196

Percentage hatch of fertile eggs - - - - - - - - - - - - - - - - 85.88%



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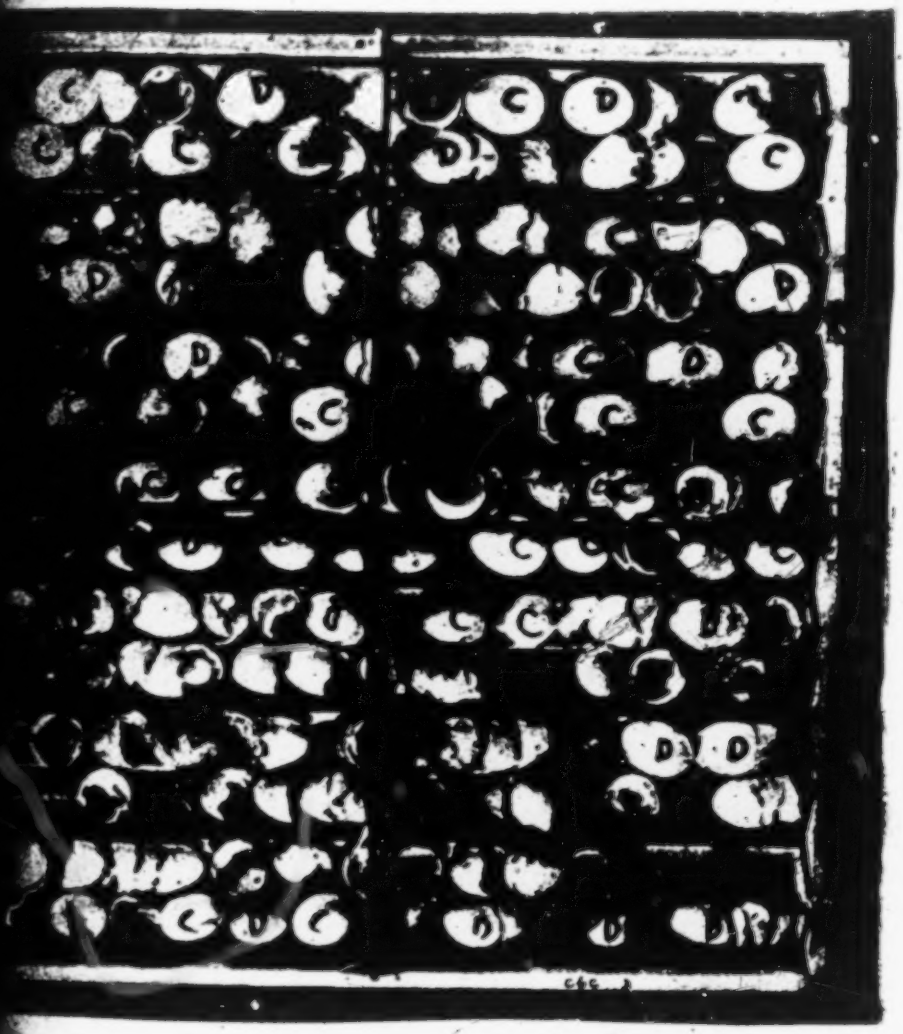

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1235

REPORT OF HATCH OF SEPT. 16, 1930

Tray No. B6

(Identified by photos showing tray numbered B6, B6-2, B6-3)

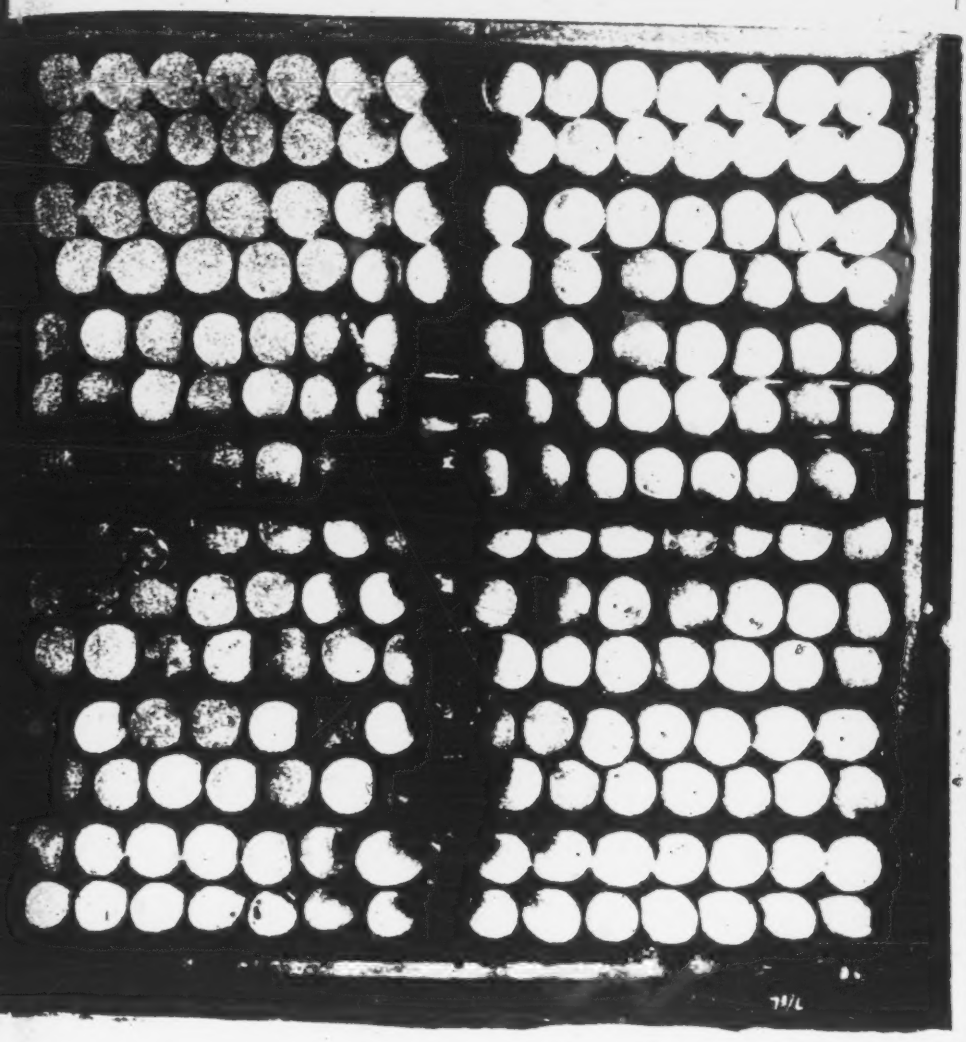
Set August 25 10:30 A.M.
Chicks taken off September 16 10:00 A.M.
Position in cabinet: Fourth tray from top

Turbulator out

No. of eggs in tray	196	
" " infertile eggs	33	
" " dead germs and chicks that failed to get out	28	61
" " chicks hatched		135
	196	196

Percentage hatch of fertile eggs - - - - - - - - - - - - - - - - - - 82.82%

1530



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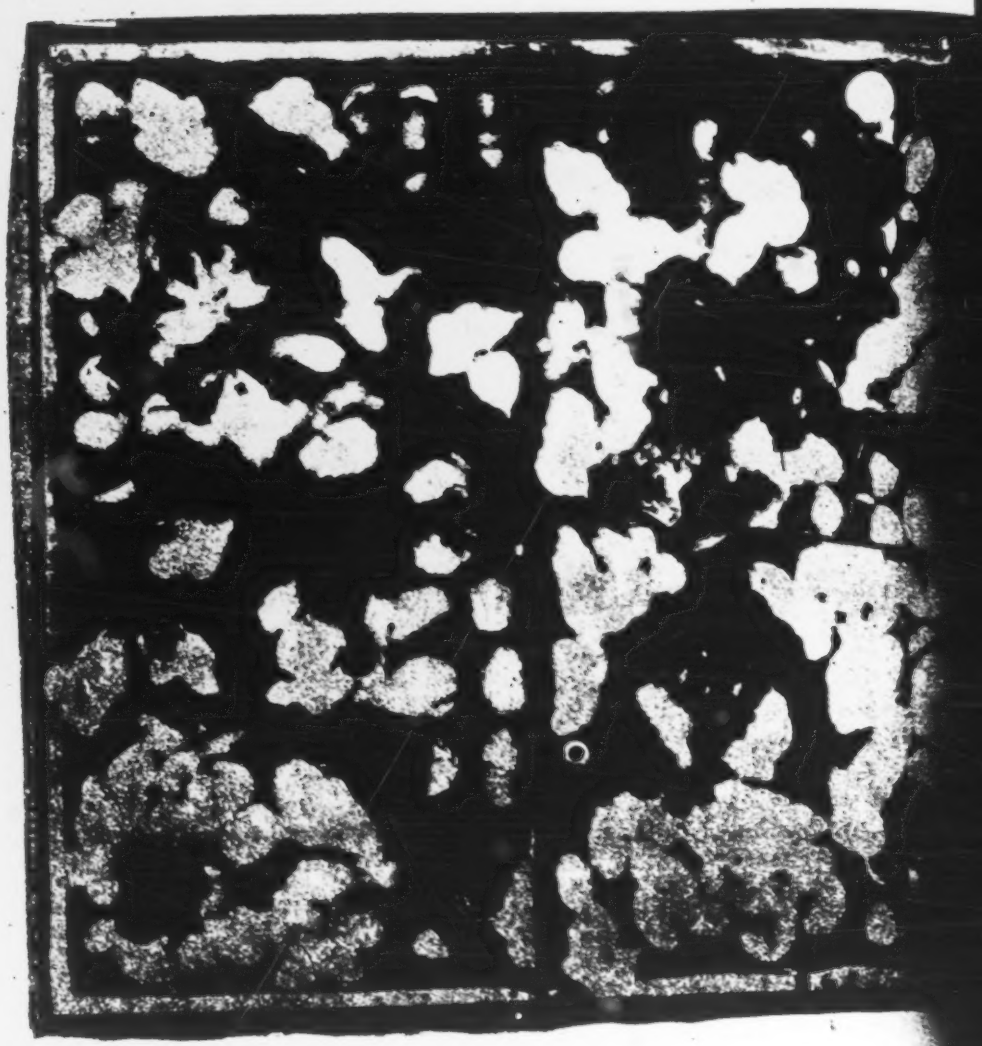

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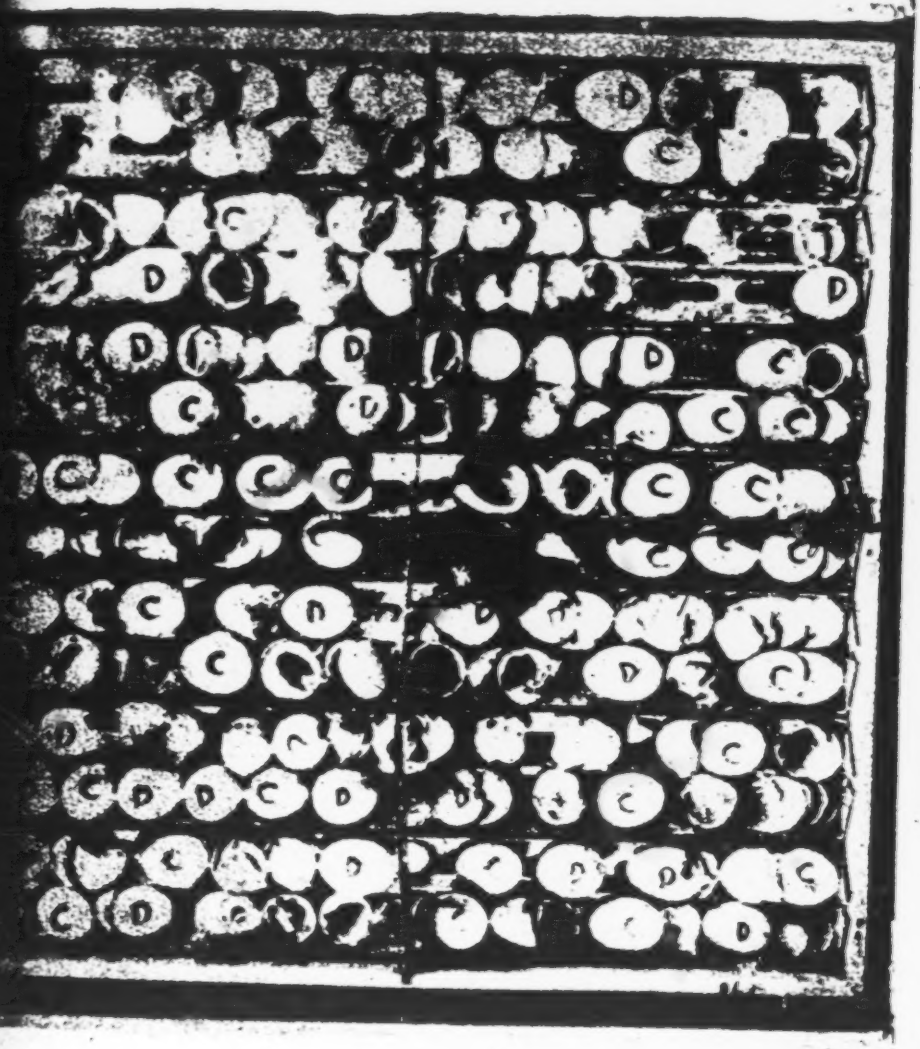

1239

REPORT OF HATCH OF SEPT. 16, 1930

Tray No. E2
(Identified by photos showing tray numbered E2, E2-2, E2-[illegible]

Set August 25 10:30 A.M.
Chicks taken off September 16 11:00 A.M.
Position in cabinet: Eighth tray from top

Turbulator running

No. of eggs in tray	196	
" " infertile eggs		44
" " dead germs and chicks that failed to get out		18
" " chicks hatched		[illegible]
	196	[illegible]

Percentage hatch of fertile eggs [illegible]

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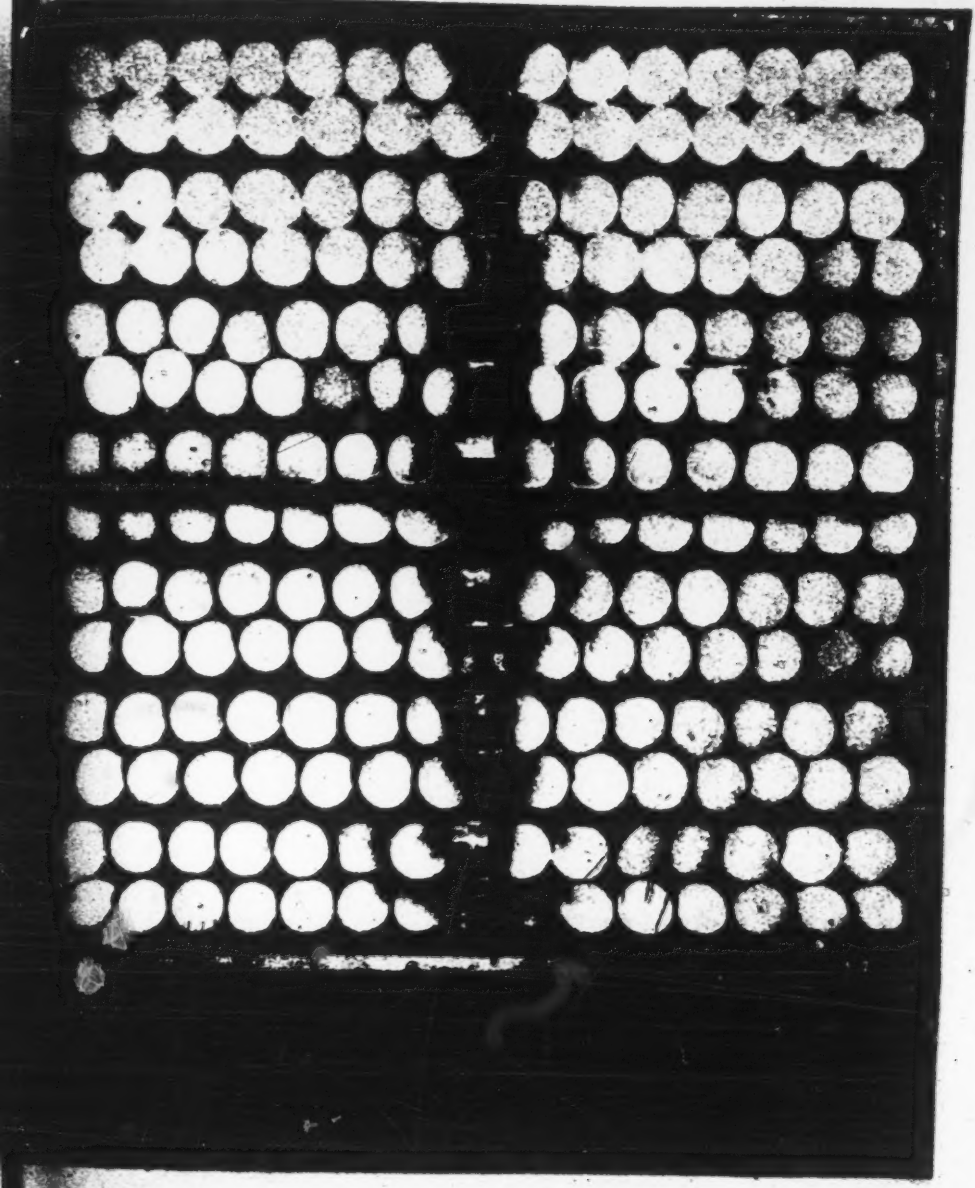

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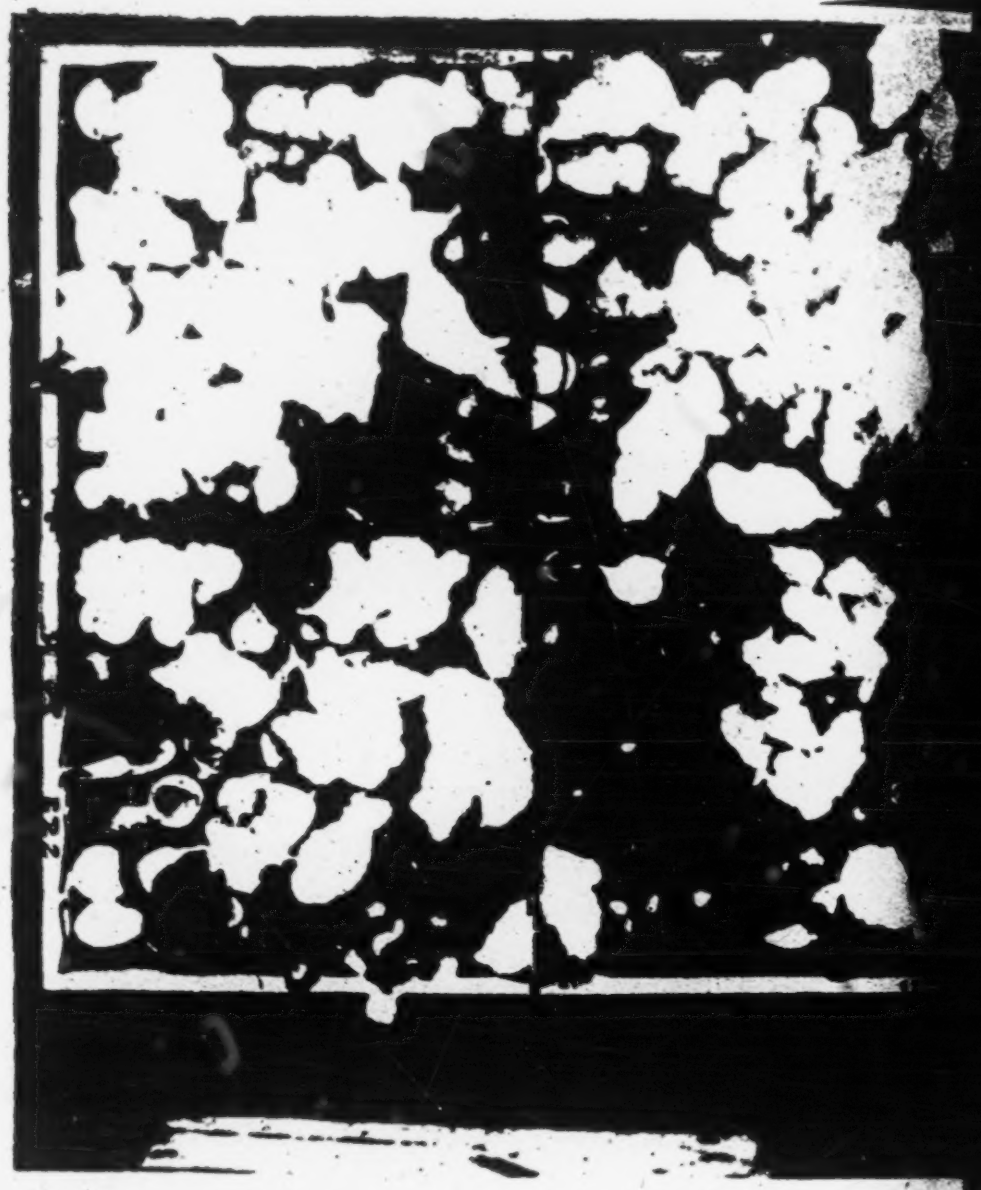

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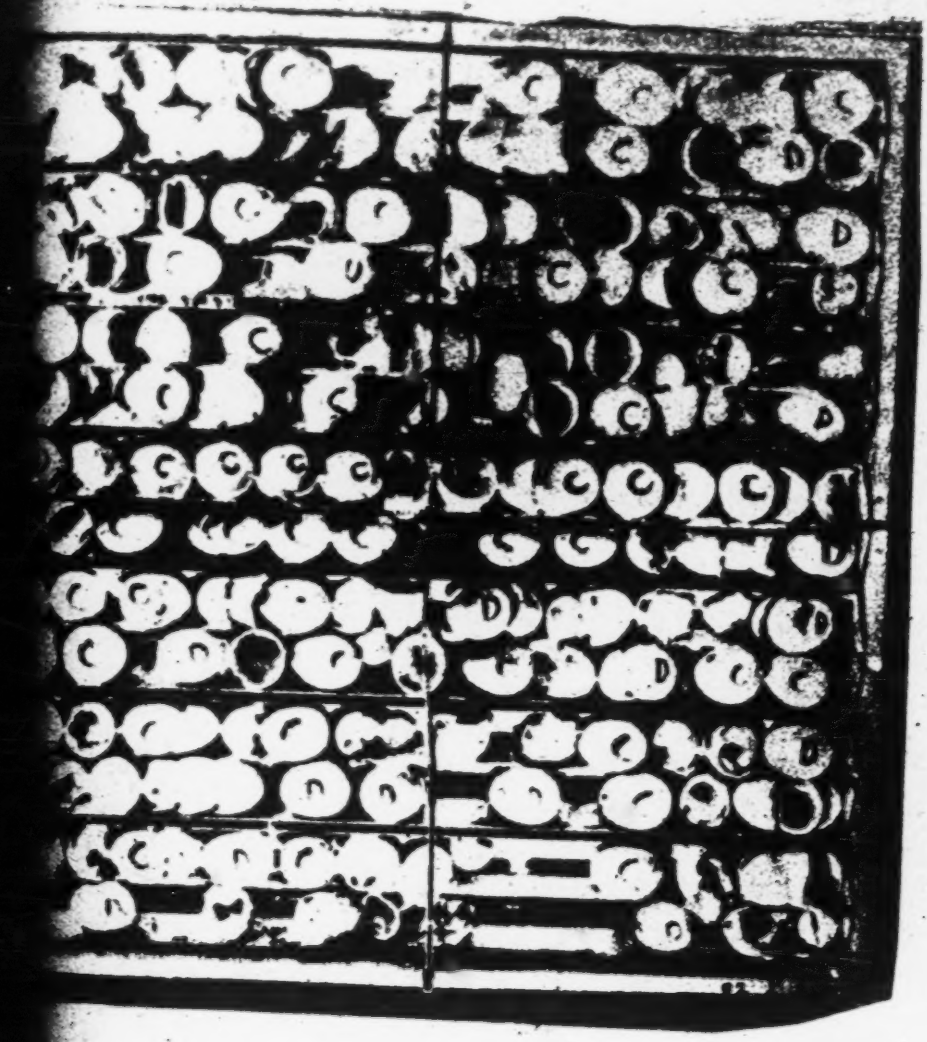

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REPORT OF HATCH OF SEPTEMBER 16, 1930

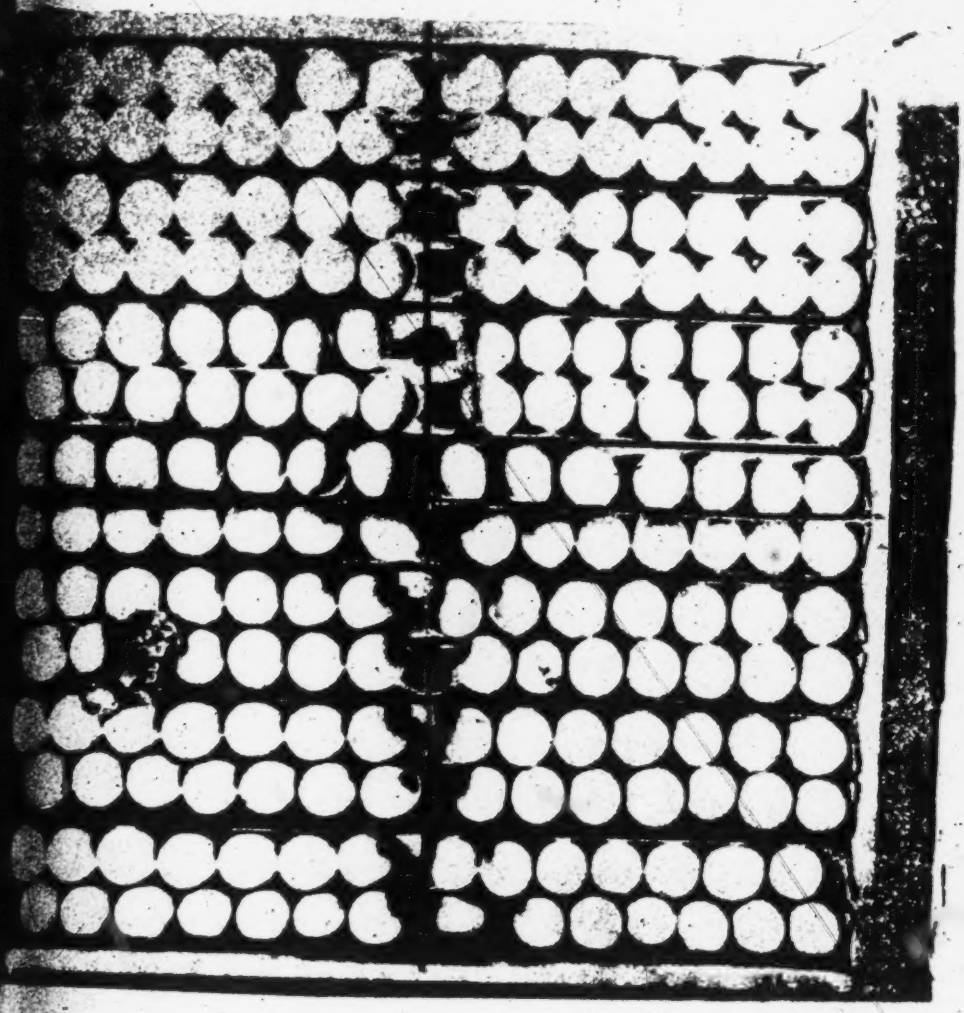
Tray No. D6 (Identified by photos showing tray numbered D6, D6-2, D6-3)

Set August 25 10:30 A.M.
Chicks taken off September 16 10:20 A.M.
Position in cabinet: Eighth tray from top

Turbulator out

No. of eggs in tray	196	
" " infertile eggs	27	
" " dead germs and chicks that failed to get out	29	56
" " chicks hatched		140
	196	196

Percentage hatch of fertile eggs - - - - - - - - - - - - - - - - - 82.84%



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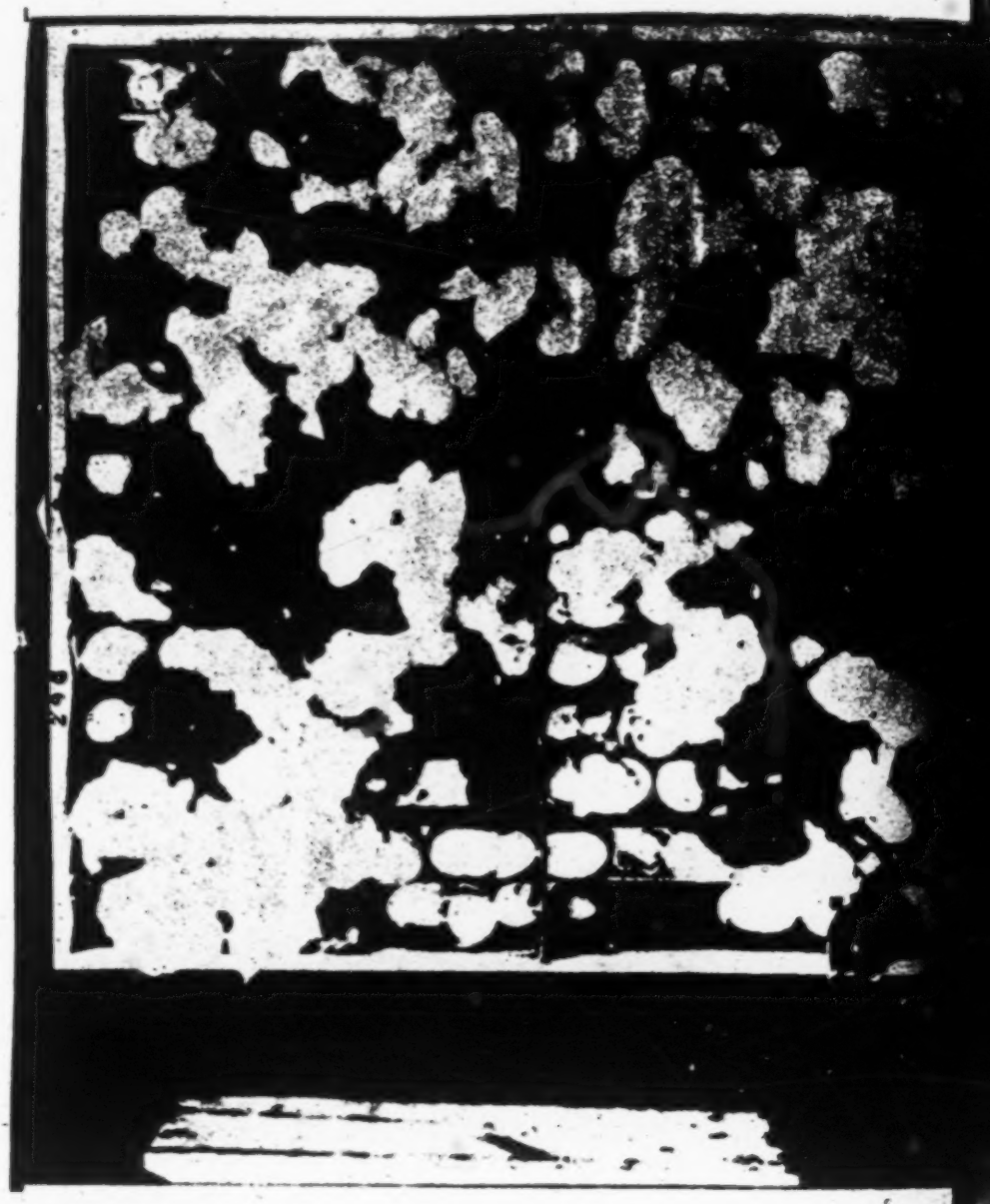

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DEFENDANT 8' EXHIBIT No. 74 A

JAMESWAY RESEARCH LABORATORY	AIR CAPACITY OF SMITH INCUBATOR FAN OLD STYLE BLADE, 16" DIAM, 4 BLADES, 3/8" & 3/4" PITCH	DATE 1-24-34 OBSERVERS JGS ~ [illegible]

REV. PER MIN.	BAR. PRESS. IN. Hg.	WATTS PER HOUR	FAN PRESS. IN. OIL	t_d DEG. FAHR.	t_w DEG. FAHR.	REL. HUM. %	CU. FT. PER LB.	BTU PER LB. PER DEG.	MILLI-VOLTS (t_d-t_w)	DELIVERY CFM	REMARKS
1630	28.80	500	0.008	75.9	57.2	28.5	[illegible]	[illegible]	2000	1065	
1630	"	"	0.06	76.6	57.2	28.6	[illegible]	[illegible]	2347	808	
1630	"	"	0.114	76.1	57.0	29.0	[illegible]	[illegible]	3150	645	
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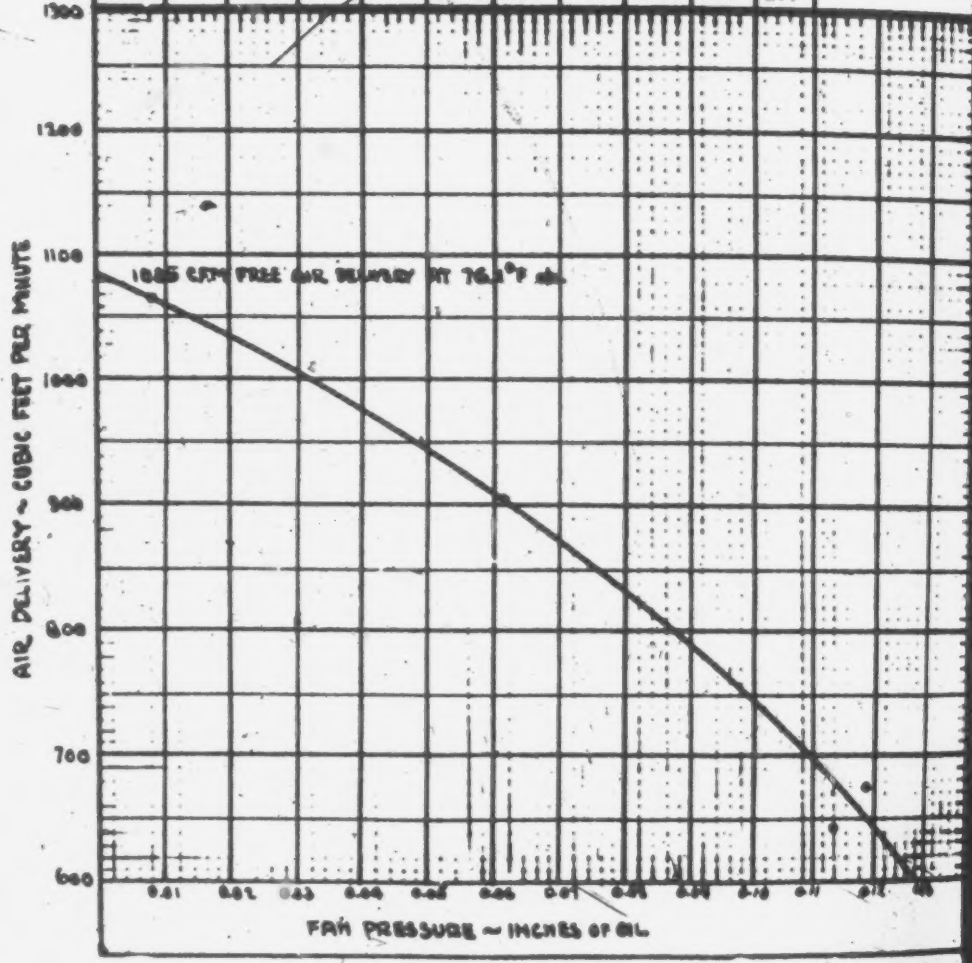
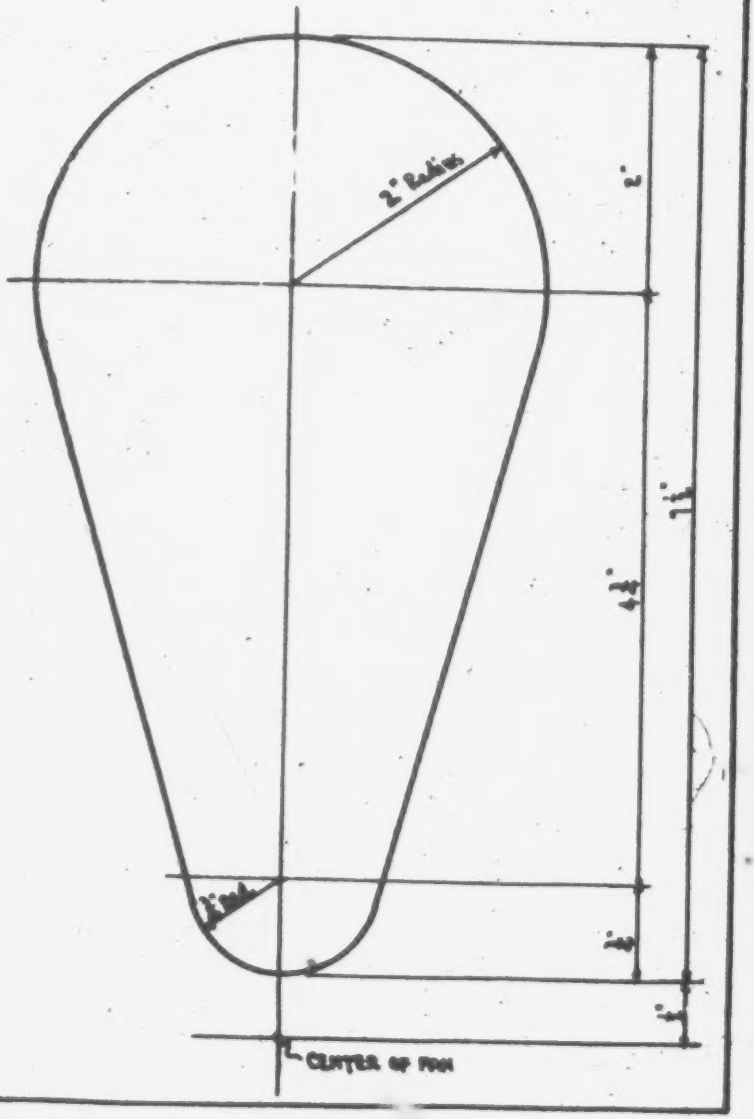


DEFENDANT 8' EXHIBIT No. 74 .B

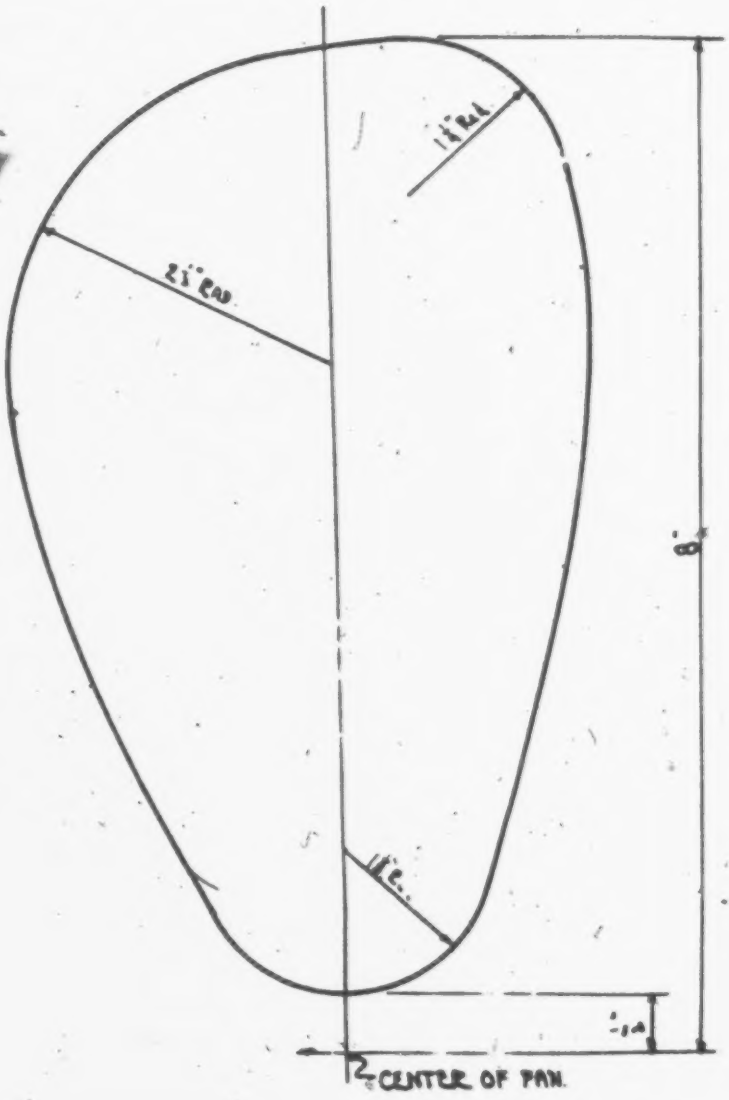
[illegible] Research Laboratory	OLD STYLE BLADE-SMITH INCUBATOR FAN	Date 1-25-26 [illegible]



DEFENDANT S' EXHIBIT No. 74 C

1249

JOHNSON RESEARCH LABORATORY	NEW STYLE BLADE, SMITH INCUBATOR FAN	DATE 1-28-24



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DEFENDANT S' EXHIBIT No. 74 D

JAMESWAY RESEARCH LABORATORY	AIR CAPACITY OF SMITH INCUBATOR FAN NEW STYLE BLADE, 16" DIAM., 4 BLADES, 1 5/8" PITCH	DATE 1-23-34 OBSERVERS [illegible]

REV. PER MIN.	BAR. PRESS. IN. HG.	WATTS HEATER INPUT	FAN PRESS. IN. OIL	t_d DEG. FAHR.	t_w DEG. FAHR.	REL. HUM. %	CU. FT. PER LB.	B.T.U. PER LB. PER DEG.	MILLI-VOLTS (t_d-t_w)	DELIVERY CFM.	REMARKS
1630	28.80	500	0.055	76.7	56.8	27.7	13.350	[illegible]	1162	1834	
1630	"	"	0.105	76.3	56.6	27.5	13.555	[illegible]	1382	1665	
1630	"	"	0.160	76.8	56.9	27.5	13.570	[illegible]	1448	1475	
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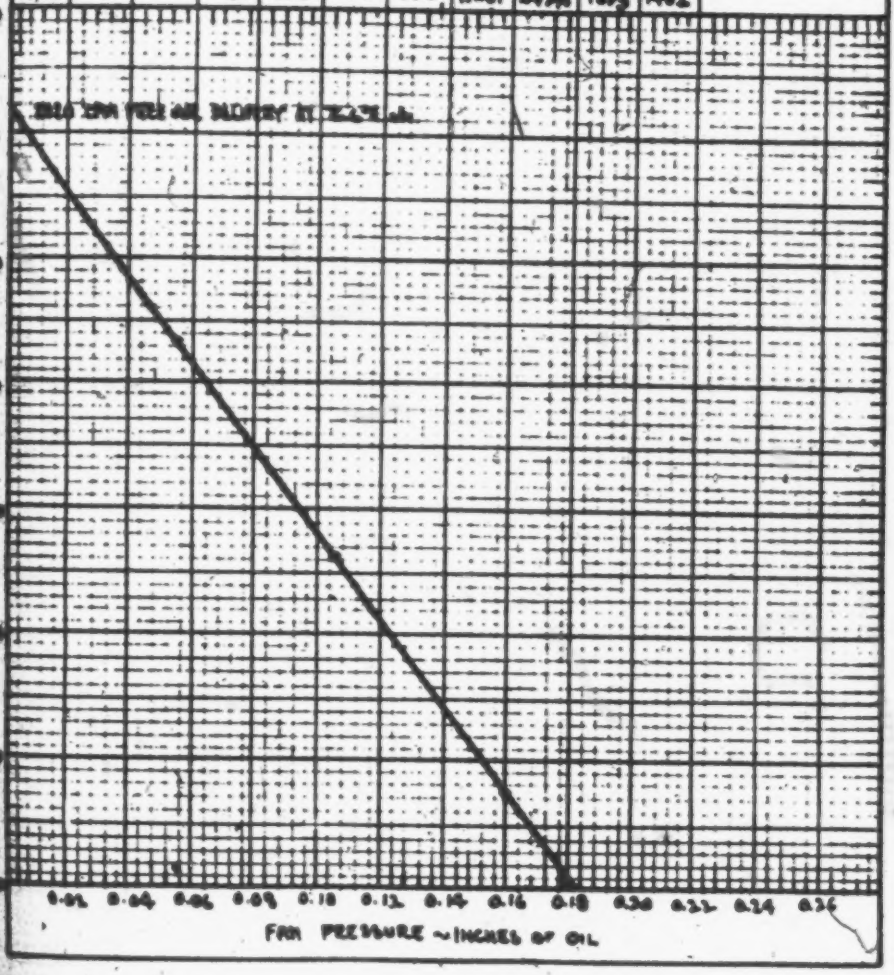


DEFENDANT'S EXHIBIT No. 75

Offered (Vol 12, p 1272.

PLAINTIFF TAGGART'S EXHIBIT 11 A, B, C BASED ON EX-PARTY TESTS WITHOUT DEFENDANT PRESENT	TESTS ON SMITH MACHINE - EXHIBIT BY JAMES AT BUFFALO DURING TRIAL IN INTER-PARTY'S TESTS	SMITH MACHINE PRODUCED BY JAMES AT BUFFALO DURING TRIAL CORRECTED TO MAKE AIR SPEED DELIVERED BY FANS SAME AS THAT REPORTED BY TAGGART ON SMITH MACHINE OF EXHIBIT 11 A, B, C OF 1200 FEET.
Taggart testified eggs in machine 47,000 to 52,000 eggs with 1,200 linear feet per minute air delivery by fans (Rec. 312), and Vol. 12 p 1270 Green)	Machine filled with 47,000 eggs and fans delivering 749 linear feet per minute.	Taggart reported Smith machine of Ex-Party test 11 A, B, C at 1,200 feet per minute linear speed of air leaving fans (Rec. 312). (Vol 12 p 1270 Green)
Average velocity reported by Taggart in Exhibit 11 A, B, C, in egg column of Smith machine 73 feet per minute with eggs in the machine. (Vol. 12 p 1270 Green)	Air speed through column of eggs 142.2 feet per minute, or about twice that reported by Taggart in 11 A, B, C, but with lower linear speed of fan delivery of 749 feet as compared with 1,200 feet of the Taggart 11 A, B, C Smith machine test. (See vol 12 p. 1269, Green) Insert 75 Insert - 75	Correct air speed through column of eggs in the Smith machine of the dimensions, capacity, and fan speed reported by Taggart in 11 A, B, C is 228 feet per minute. This is 3.11 times Taggart's report of air speed in egg column in 11 A, B, C, pursuant to Greene's testimony that air through egg column in Smith machine would be three to four times greater with eggs than without eggs. (Vol 12 p 1271 Green) Insert fris 0" Gorak - -2

C. W. ZIMMER.

SEMIFIBELESS INCUBATOR.

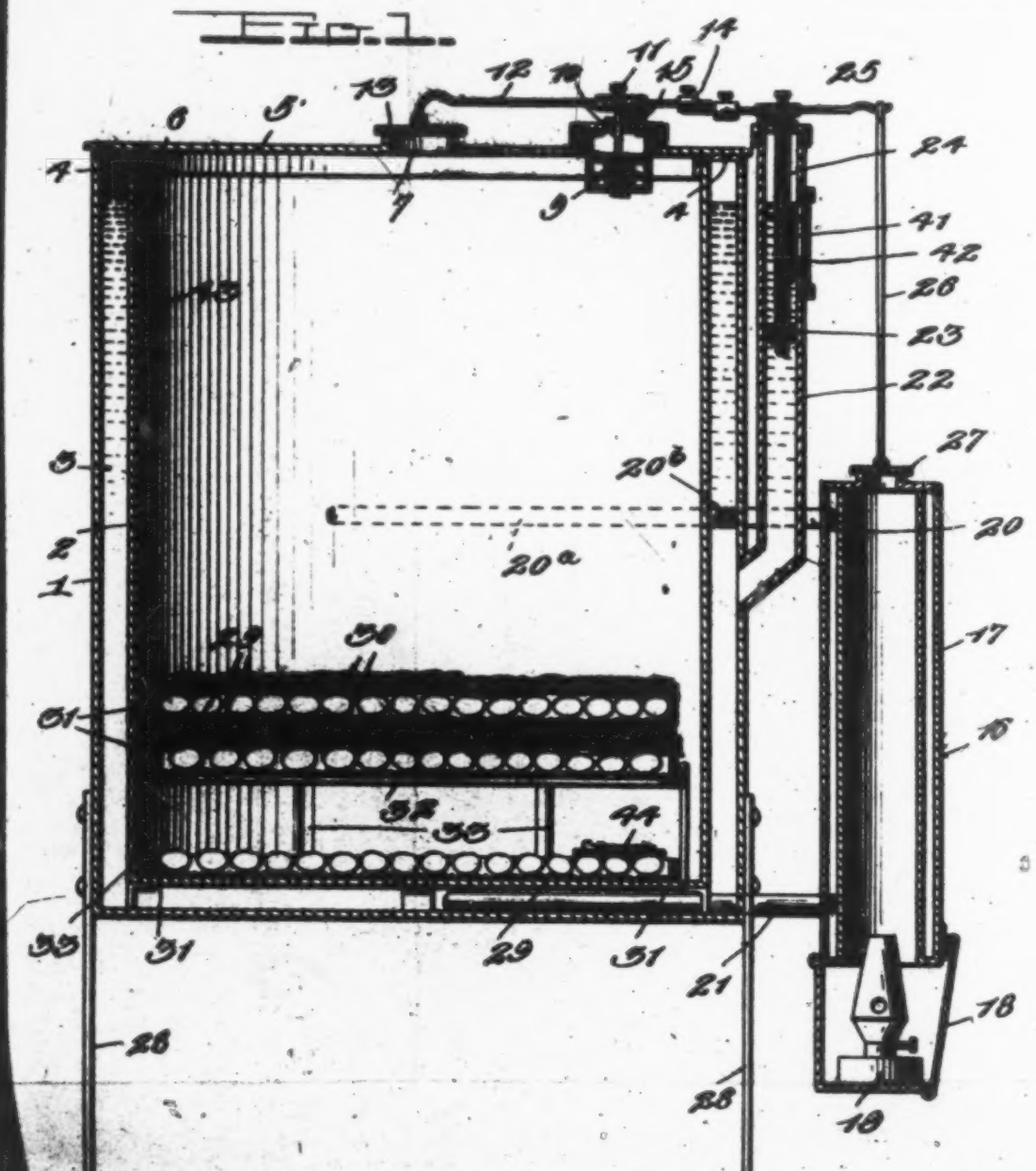
APPLICATION FILED DEC. 14, 1911.

1,075,747.

Patented Oct. 14, 1913.

3 SHEETS—SHEET 1.

Fig. 1.

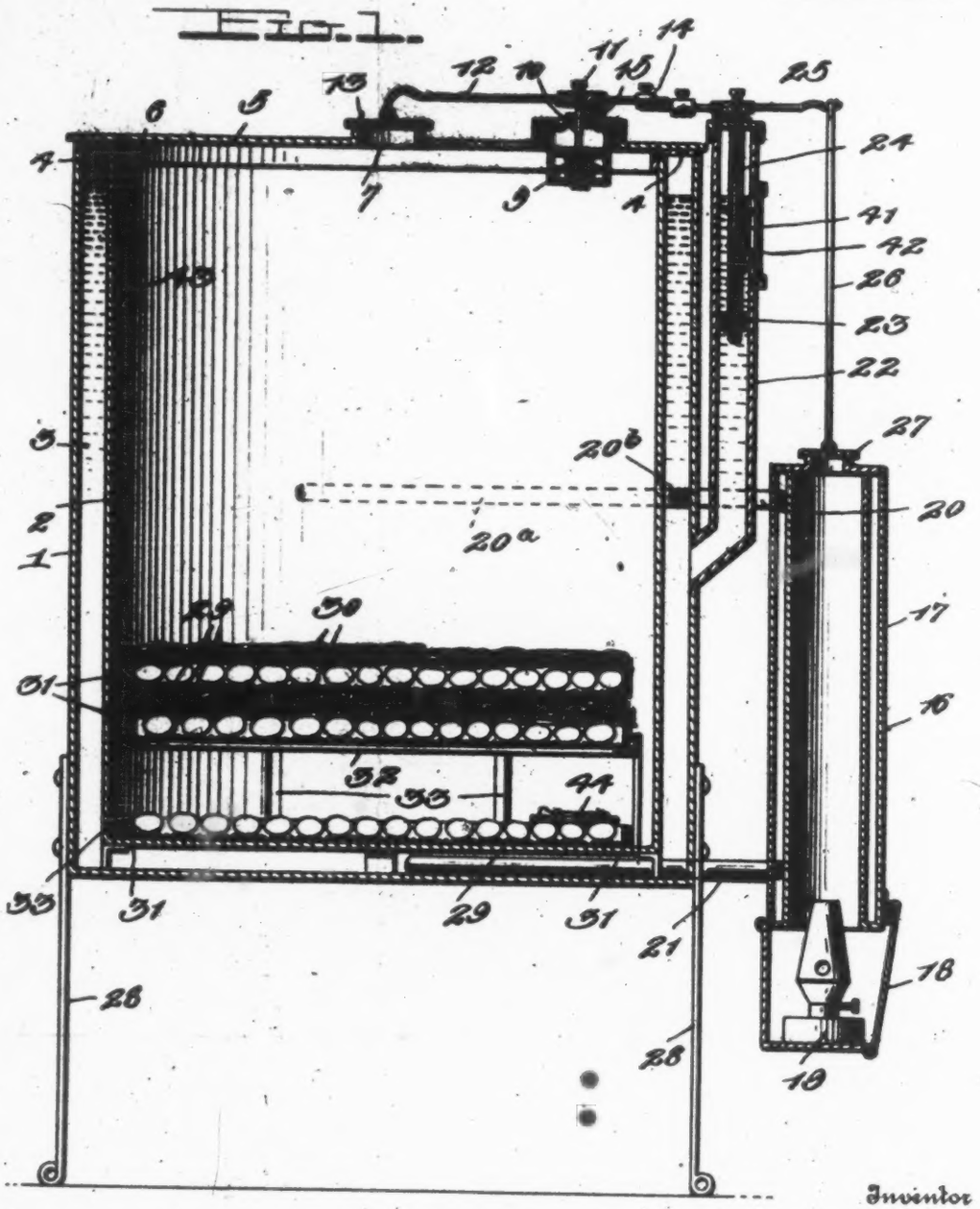


1,076,747.

Patented Oct. 14, 1913.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses
Chas. L. Griesbauer.
G. B. Norton.

Inventor
Cyrus W. Zimmer,
By Watson E. Coleman
Attorney

1253

C. W. ZIMMER.

SEMIFIRELESS INCUBATOR.

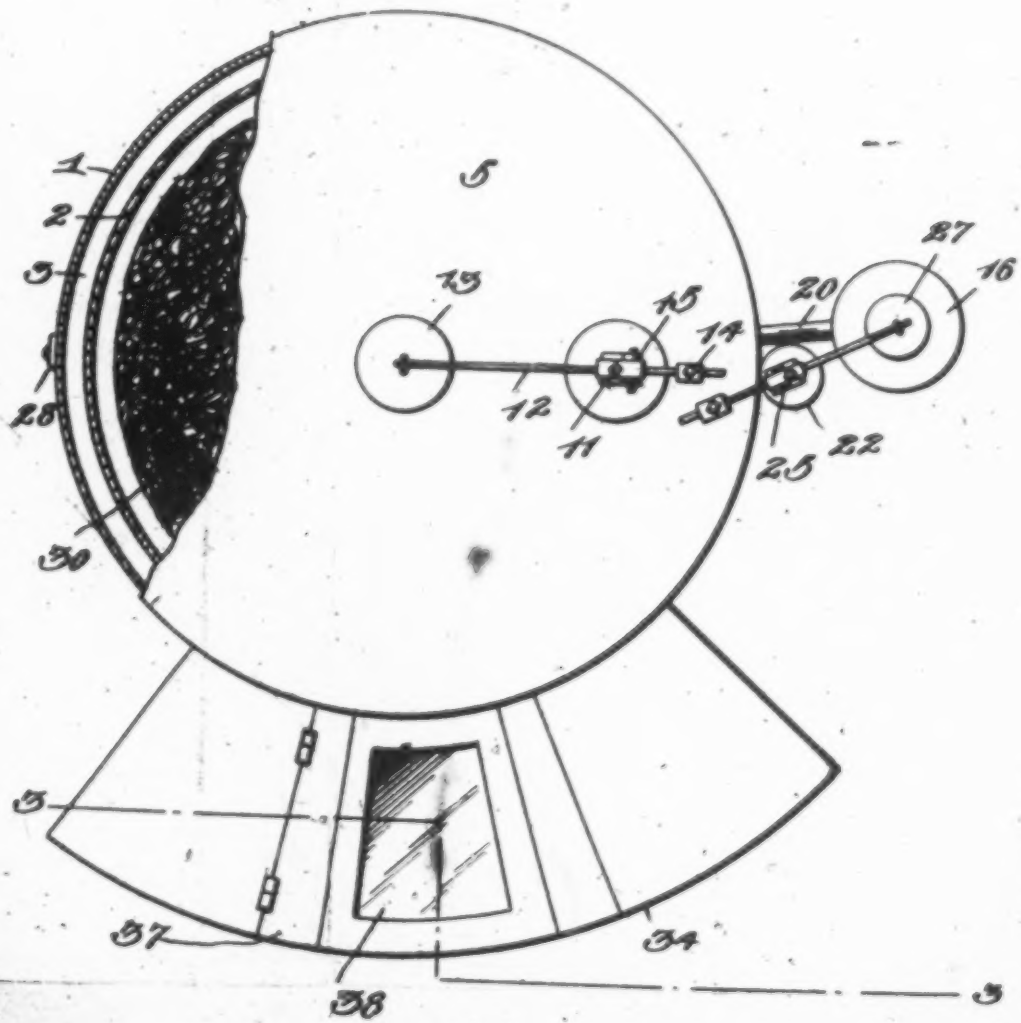
APPLICATION FILED DEC. 14, 1911.

1,075,747.

Patented Oct. 14, 1913.

3 SHEETS—SHEET 2.

Fig. 2.



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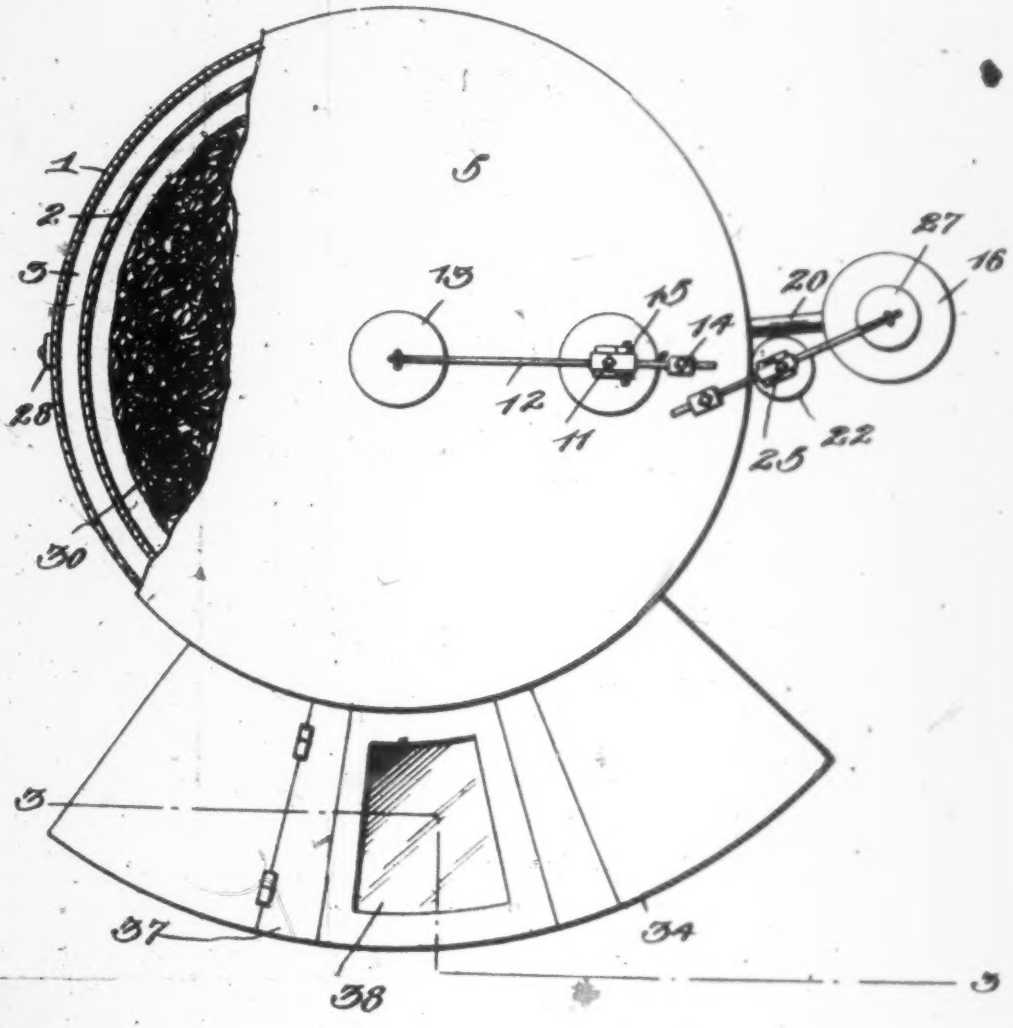

Witnesses
Chas. L. Griesbauer.
A. B. Norton.

Inventor
Cyrus W. Zimmer,
By Watson E. Coleman
Attorney

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3 SHEETS—SHEET 3.

Fig. 3.

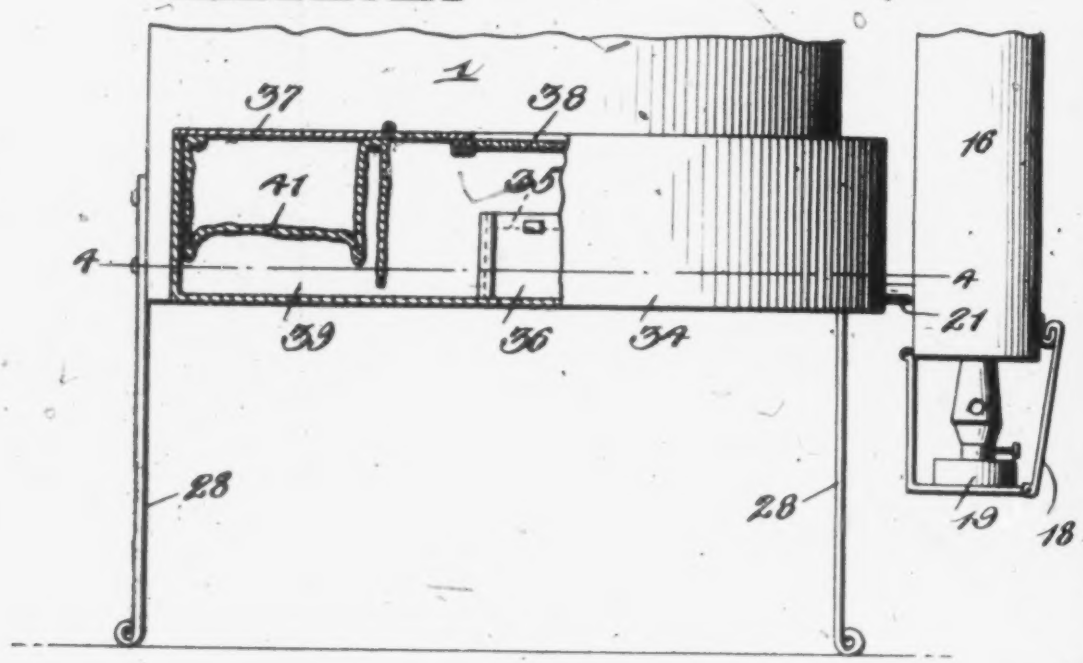
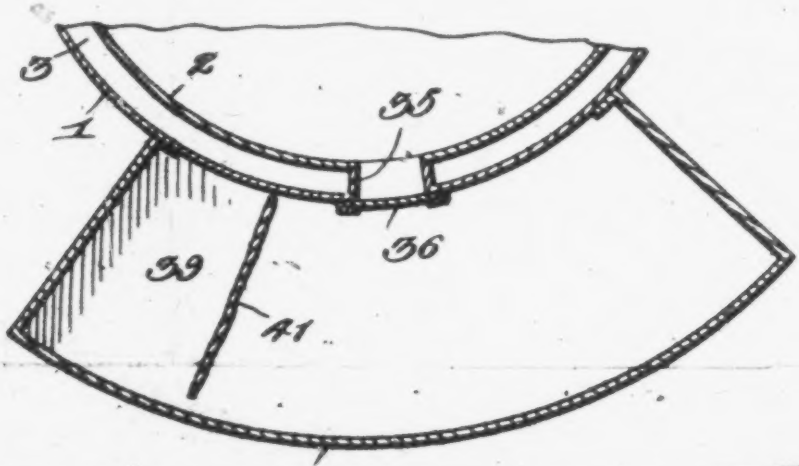


Fig. 4.



1,076,141. Patented Oct. 14, 1913.

3 SHEETS—SHEET 3.

Fig. 3.

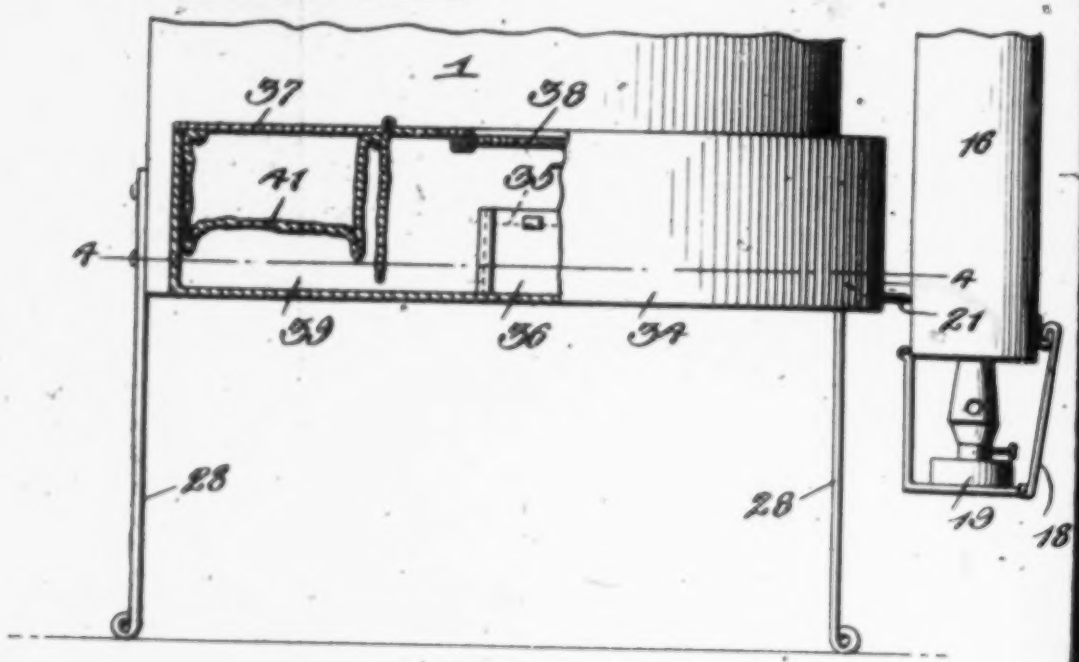
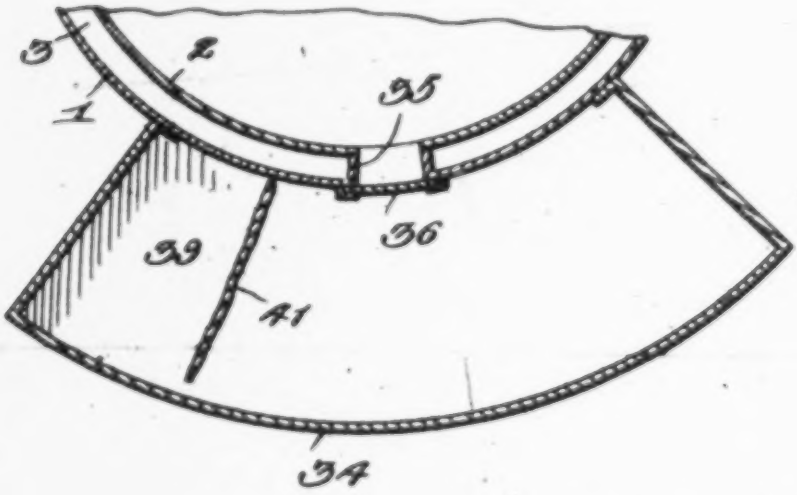


Fig. 4.



Inventor

Cyrus W. Zimmer,

By Watson E. Coleman

Attorney

Witnesses

Alex. L. Griesbauer.

G. B. Norton.

UNITED STATES PATENT OFFICE.

CYRUS W. ZIMMER, OF NEW YORK, N. Y.

SEMIFIRELESS INCUBATOR.

1,075,747. Specification of Letters Patent. Patented Oct. 14, 1913.

Application filed December 14, 1911. Serial No. 665,653.

To all whom it may concern:

Be it known that I, CYRUS W. ZIMMER, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Semifireless Incubators, of which the following is a specification, reference being had to the accompanying drawings.

This invention is an improved incubator which I term a semi-fireless incubator and by means of which the animal heat of the eggs which, after having been partially incubated by artificially or externally applied heat may be utilized for incubating other eggs, supplied to the incubator from time to time, one object of my invention being to effect improvements in the construction of the incubator, whereby a uniformity of heat may be maintained.

The invention further consists in the construction, combination and arrangement of devices hereinafter described and claimed.

In the accompanying drawings: Figure 1 is a vertical sectional view of an incubator constructed in accordance with my invention; Fig. 2 is a plan view of the device with parts broken away. Fig. 3 is an elevation, partly in section of my improved incubator, showing a nursery on one side thereof, the nursery being indicated in section; and Fig. 4 is a fragmentary horizontal section through the device as seen on line 4—4, Fig. 3.

The body of my improved incubator comprises an outer shell or casing 1, here shown as cylindrical in form, and an inner vessel 2 which corresponds in shape with and is somewhat smaller than the outer shell and is spaced from the sides and bottom of the latter so that a water space 3 is formed between the bottoms and also between the side walls of the outer and inner vessels. These vessels are preferably made of sheet metal, but may be made of any suitable material.

suitable bracket or hanger. This thermostatic wafer actuates a pin 10 which operates in a small hole in the cover and is in contact with an adjusting screw 11 carried by a weighted lever 12, which lever has a damper 13 connected to its longer end and disposed over the opening 7, the weight 14 being at the shorter end of the arm of the lever, and the latter being pivotally mounted between a pair of ears 15 with which the cover is provided. At one side of the body of the incubator is a heater 16 which comprises a water jacketed flue 17, at the lower end of which is a carrier 18 for a suitable lamp 19. The water jacket of the flue 17 is connected to the water space of the body of the incubator by a flow pipe 20 and a return pipe 21. Hence, the water which is heated by the action of the lamp in the water jacket of the flue passes into the water space of the body of the incubator and the cooler water from the latter returns back, through the return pipe 21, into the water jacketed heating flue and hence a constant circulation of heated water is maintained throughout the water jacketed heating flue and the water space of the incubator and the temperature in the incubating chamber of the latter is kept substantially uniform.

That portion of the flow pipe 20 within the incubator is provided with two curved branches 20^a, which extend partly around in the water space 3, the two branches, in practice, extending about two-thirds the circumference of the incubator. This pipe carries the water in opposite directions about two-thirds of the way around the incubator and the open ends of the branches permit the water from said pipe to flow into and mingle with the water in the water space. Openings 20^b are also provided in these branches to permit of the partial escape of the heated water at different points around the incubator. These openings are of such size and number and are so located as to

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A vertical pipe 22 leads from one side of the water space of the incubator body and is filled with water therefrom, and in this pipe is placed a thermostatic wafer 23 which is similar to the wafer 8 hereinbefore described and, through the instrumentality of a pin 24, operates a weighted lever 25, the longer arm of which is connected, by a wire 26, to a damper 27 which operates at the upper end of the water jacketed flue.

The wafer 9, in connection with the damper 13 of the incubating chamber, constitutes an auxiliary regulator, located on the lid of the incubator, which serves to allow the operator to permit a certain amount of ventilation for the incubating eggs all of the time, which ventilation may be increased or decreased at will. The auxiliary regulator also prevents the chicks from being killed by being overheated, in the event that the regulator for the heating apparatus should fail to operate.

The thermostatic wafer 23, in connection with the damper 27, directly controls the draft from the lamp and, hence, also the heating efficiency of the water jacketed flue and, thereby, my improved incubator is doubly regulated as to its temperature and hence I am enabled to readily maintain the required even temperature in the incubating chamber. Moreover, the incubating chamber is automatically ventilated, as will be understood. Suitable supporting legs such as are indicated at 28 are provided for the body of the incubator to support the same at the desired distance above the floor.

In practice, my incubator is preferably made of such size as to provide a capacity for a thousand eggs, the inner diameter of the inner vessel 2, which constitutes the incubating chamber, being twenty-two inches and the height thereof twenty-eight inches. The incubator may, however, be made of any size desired.

A series of removable egg trays 29 is also provided and a series of mats 30 which are preferably feather mats. The trays are made of wire mesh and each is provided with a metal rim 31. The diameter of the trays is less than that of the incubating chamber. In practice, where the incubating chamber is twenty-four inches in diameter I make the trays twenty-two inches in diam-

around the layers of eggs, and I may also place a thermometer 44 in each egg tray, with the eggs under the feather mats, hence enabling the operator to know the temperature of the water which heats the incubator, the temperature of the air in the incubating chamber surrounding the eggs, as well as the temperature of the eggs in each and every tray.

In the operation of my incubator, and by my improved method of hatching, I introduce a layer of eggs, progressively from day to day. On the first day a layer of eggs is placed directly in the bottom of the incubating chamber, after the incubator has been artificially heated and while the heating apparatus is in operation, and a feather mat is placed on said layer. On the second day another layer is placed in the bottom of the incubating chamber, the first layer being placed in one of the trays and disposed on the new layer, and separated therefrom by a feather mat and also covered by another feather mat. I continue this process from day to day, supplying a new layer each day at the bottom of the incubating chamber and raising the other layers, so that the layers are disposed in the order of their ages, with the oldest eggs on top. I continue this for ten consecutive days. During this period the incubator is artificially heated and is kept at the usual incubating temperature, and I continue this artificial heating for two days longer, or until the twelfth day is reached and the upper layer of eggs is twelve days old in point of incubation. By this time incubation has so far progressed in the eggs of the upper layer that there is circulation of blood in the embryos of that layer and the said layer gives off considerable animal heat. At this point in the period of incubation the lamp is extinguished and the incubator allowed to cool gradually, and when it has become partially cooled all the trays containing the eggs are taken out of the incubator and a mat of feathers is placed on the bottom of the incubating chamber. The eggs are now replaced in the incubating chamber in reverse order to the former arrangement, that is to say, the oldest eggs in point of incubation are placed in first, at the bottom of the superimposed trays or layers of eggs, the newest eggs being on top. Hence the eggs in which

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In practice I employ a thermometer 41, in the pipe 22, suspended therein and submerged in the water. The pipe has a glazed opening 42 in one side, through which the said thermometer may be inspected. I also, when the incubator is in operation, use thermometers 43, suspended in the incubating chamber at different heights in the space the temperature of the eggs in each and every tray.

In the operation of my incubator, and by my improved method of hatching, I introduce a layer of eggs, progressively from day to day. On the first day a layer of eggs is placed directly in the bottom of the incubating chamber, after the incubator has been artificially heated and while the heating apparatus is in operation, and a feather mat is placed on said layer. On the second day another layer is placed in the bottom of the incubating chamber, the first layer being placed in one of the trays and disposed on the new layer, and separated therefrom by a feather mat and also covered by another feather mat. I continue this process from day to day, supplying a new layer each day at the bottom of the incubating chamber and raising the other layers, so that the layers are disposed in the order of their ages, with the oldest eggs on top. I continue this for ten consecutive days. During this period the incubator is artificially heated and is kept at the usual incubating temperature, and I continue this artificial heating for two days longer, or until the twelfth day is reached and the upper layer of eggs is twelve days old in point of incubation. By this time incubation has so far progressed in the eggs of the upper layer that there is circulation of blood in the embryos of that layer and the said layer gives off considerable animal heat. At this point in the period of incubation the lamp is extinguished and the incubator allowed to cool gradually, and when it has become partially cooled all the trays containing the eggs are taken out of the incubator and a mat of feathers is placed on the bottom of the incubating chamber. The eggs are now replaced in the incubating chamber in reverse order to the former arrangement, that is to say, the oldest eggs in point of incubation are placed in first, at the bottom of the superimposed trays or layers of eggs, the newest eggs being on top. Hence, the eggs in which incubation has progressed so far as to cause them to give out animal heat are below the other eggs and this animal heat is utilized to maintain the required temperature in the incubating chamber and to continue the hatching of all of the eggs. The artificial heating may be wholly or partially discontinued or may be progressively reduced from day to day, according to the conditions.

It will be understood that each layer of eggs supports the weight of the eggs in the

upper layers and that the eggs in the bottom layer in which the process of incubation is the most advanced, support the weight of all the other eggs. The heat of the hatching eggs causes them to expand and apply pressure to the shells, thus tending to disintegrate the shells, and this disintegrating process is greatly promoted and facilitated by the weight of the superincumbent layers of eggs, the weight tending to flatten the lower eggs, change the shape of their shells and, hence, aiding in their decomposition and rendering them somewhat more brittle. This enables the chicks, when the hatching is complete, to be liberated more easily.

When the day arrives for the hatching of the lowest layer of eggs, said layer is relieved of the weight of the other layers. To effect this, the other layers are removed, a support is placed in the bottom of the incubator, and the layers of eggs are then replaced in the same order as before.

A suitable support is shown in Fig. 1 and comprises a circular form 32 having a series, say about six, of supporting legs 33. The height of this support is such that it forms a space of about an inch above the bottom layer and below the next lowest layer, thereby providing room for the chickens to hatch at the bottom of the incubator.

I also provide a nursery 34 for the newly hatched chickens. This nursery is on one side of the incubator, directly in contact therewith and is reached by the chicks through an opening 35 with which the incubator is provided, there being a slide 36 to cover this opening when desired. The nursery has a lid 37 provided with a glazed opening 38 which admits light thereto. The chicks after hatching and becoming strong enough to run around, see and are attracted by this light, which also shines through the opening 35, and go into the nursery chamber, where gravel would be placed on the floor. At one end of the nursery is a hover chamber 39, curtained off, as at 40, and provided with a hover blanket 41, suspended from the top, under which the chicks can cuddle for warmth, a considerable degree of heat being supplied by the warm air which comes in from the incubating chamber. The lid of the nursery [illegible]

The feather mats which I employ in my incubator to cover the layers of eggs serve to retain heat and also to ventilate the eggs and closely approach natural conditions. By making the egg trays of less diameter than the incubator chamber in which they are placed the eggs in the incubator chamber are kept surrounded on all sides by the air in the incubator chamber and, hence, they are effectually ventilated.

The construction of my improved fireless incubator is such that the operator has a wide control over the necessary conditions for successful incubation, in that he can vary the number of cover mats over the eggs in the incubating chamber as may be required to retain the necessary heat and moisture in the incubating chamber under varying conditions, as to locality, altitude, heat and cold, and the season of the year.

Having thus described my invention I claim:

An incubator comprising an outer casing, an inner casing spaced from the latter to provide a water space between the sides and bottoms of the same, a vertical pipe disposed outside of the outer casing and having the lower end thereof communicating with said water space intermediate the upper and lower ends thereof, said pipe extending to a point above the top of the outer casing and adapted to contain water to the same height as that in the water space, means to heat and maintain circulation in said water space including a heater, and a flue in connection therewith disposed beyond the outer casing, a damper for said flue, a thermostatic wafer disposed in said pipe from the top thereof to be partially immersed in the water therein, means in connection with the upper end of said wafer and said damper for thermostatically regulating the latter, whereby to regulate the heating of the water in the water space, a removable top applied to the upper ends of said casings, said top being provided with a damper, and additional means carried by said top and actuated by the heat units in the inner casing for thermostatically regulating the last mentioned damper.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

CYRUS W. ZIMMER.

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are placed the eggs in the incubator chamber are kept surrounded on all sides by the air in the incubator chamber and, hence, they are effectually ventilated.

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CYRUS W. ZIMMER.

Witnesses:
HERBERT D. COHEN,
JEREMIAH O. CROWLEY.

[fol. 1553] UNITED STATES DISTRICT COURT

[Title omitted]

OPINION—Filed June 28, 1935

Appearances:

Albert L. Ely, Max D. Farmer, Attorneys for Plaintiff; Ely & Barrow; Parker, Prochnow & Farmer, of Counsel.

Toulmin & Toulmin, Attorneys for Defendants; John S. Powers, of Counsel.

KNIGHT, District Judge:

Patent No. 1,262,860 was issued to Samuel B. Smith, assigned to Buckeye Incubator Company, hereinafter referred to as "Buckeye", and reassigned to Smith subject to a license to Buckeye granting "the full and exclusive right, [fol. 1554] liberty and license to make, use and sell in and throughout the United States • • • incubators embodying the invention shown, described and claimed in said Letters Patent • • •." The exclusive license granted was limited to "incubators in which the total egg and chick holding capacity • • • shall not exceed 16,500 eggs." The assignment to Smith included the right to the recovery of damages and profits for past infringements. By agreement executed on the same date and made a part of the assignment by reference, Smith was given the right to prosecute all infringers, paying all expenses of prosecution and receiving all recoveries therefrom except that Buckeye was to be reimbursed for expenses incurred in pending suits. This action was brought to restrain further infringement of the patent and to fix the damages incurred by reason of alleged past infringement.

At the close of the trial defendant moved for dismissal of the action on the ground of absence of a necessary party and plaintiff's failure to prove title.

Defendant asserts that the Buckeye Incubator Company is co-owner of the patent in suit; that the Buckeye Incubator Company would be injuriously affected by continuance of the suit and would be entitled to institute another suit against the defendants based on the rights acquired under the license agreement.

The Buckeye Company is a necessary party in this action only if it is a co-owner or exclusive licensee. Smith relies upon the assignment to show that Buckeye is not a co-owner. The assignment provided that the Letters Patent were "to [fol. 1555] be held and enjoyed by the said Smith, his heirs and assigns as fully and completely as the same would have been held and enjoyed by said Buckeye Incubator Company had this assignment not been made".

Defendant claims that Buckeye is a co-owner for the reason that it holds exclusive license to make, use and sell incubators having a capacity not exceeding 16,500 eggs and as an exclusive licensee must be joined in the action. It is also contended that plaintiff may not make, use or sell incubators of less than the above mentioned capacity and is not damaged by defendant's invasion of that field.

The assignment from Buckeye to Smith precludes a finding that they are co-owners of title to the patent. The assignment is properly drawn and purports to convey the entire title, reserving only a license to the assignor. Nor need Buckeye be joined as a party as a co-owner by reason of its exclusive license to produce the smaller sizes of incubators under the patent. The license to Buckeye was a license covering less than the whole of the patent. To require joinder as a party a license must cover the entire scope of the patent. In Radio Corp. of America v. Emerson, 296 F. 51, the license granted covered the entire monopoly of the patent but restricted the field of uses between amateur and commercial fields. Independent Wireless Telegraph Co. v. Radio Corp. of America, 269 U. S. 459, was a similar case. Defendant quotes from Crown Die & Tool Co. v. Nye Tool & Mach. Works, 261 U. S. 24, a part of a quotation from Waterman v. MacKenzie, 138 U. S. 252, in which it is said that the patentee or his assigns may transfer an undivided part or [fol. 1556] share of the exclusive right to make, use and vend the invention and that such a transfer is an assignment vesting in the assignee a title in so much of the patent itself with a right to sue infringers. With that principle this Court is in accord. It does not accord with the defendant's assertion that the license here in question is a transfer of an undivided part or share of the exclusive right given by the patent. Here the right is to use the patent to a limited degree only, and therefore cannot be an undivided part or share of the entire patent right.

The following paragraph from Gayler v. Wilder, 10 Howard 477, bears directly on the issue: "by the 11th section of the Act of 1836 the patentee may assign his whole interest or an undivided part of it; but if he assigns a part under this section, it must be an undivided portion of his entire interest under the patent placing the assignee upon equal footing with himself for the part assigned. Upon such an assignment the patentee and his assignees become joint owners of his whole interest secured by the patent according to the respective proportions which the assignment creates". I find, therefore, that the license to Buckeye was a license less than exclusive and that the Buckeye Incubator Company need not be joined as a party in this action. This accords with the finding of Judge Hincks, of the District Court of Connecticut in Smith v. Hall, et al., on motion for preliminary injunction, decided February 27, 1935, and Judge Molyneaux of the District Court of Minnesota, in Smith v. Street, et al., supra.

It is claimed by defendant that plaintiff has not proved [fol. 1557] ownership of title to the patent. Defendant's position is that since the assignment and contract bear even date and the former recites that it was executed at Springfield, Ohio, and the latter recites that it was executed at Columbus, Ohio, and the witness who testified to seeing them both signed did not testify to meetings in the two cities on that date, his testimony is insufficient to prove the execution. Plaintiff's witness testified that he was present acting as attorney for Mr. Smith when the papers were executed and that he recognized the signatures on the documents introduced as signatures he saw made at that time. This testimony is sufficient to prove execution of the documents and such execution having been proved, proof of title in the plaintiff has been sufficiently made. The variance in the documents as to the place of execution is immaterial. Had no place of execution been mentioned, the assignment and the contract would have been no less valid. Statement of the place of execution was a non-operative and unnecessary formality and an error in one of the documents as to such place of execution will not defeat the intention of the parties inasmuch as direct proof of the execution of the documents was offered. Since no attempt was made to prove them as documents of public record, the cases cited by defendant in regard to acknowledgment before a notary

or other qualified officer are not applicable. The motion for dismissal is denied.

Claims 1, 2, 3 and 5 are in issue. Defendant offers the usual defenses of invalidity and non-infringement. The patent has been in litigation many times, and the validity [fol. 1558] has been upheld in each instance where questioned. Buckeye v. Wolf, 291 F. 253, affrd. 296 F. 680; Buckeye & Smith v. Cooley, D. C. of N. J., April 23, 1925, affrd. 17 F. (2d) 453; Buckeye v. Petersime, D. C. S. Ohio, September 17, 1926; affrd. 19 F. (2d) 721; Buckeye v. Blum, 17 F. (2d) 456; affrd. 27 F. (2d) 333; Buckeye v. Hillpot, 22 F. (2d) 855; affrd. 24 F. (2d) 341; Snow, et al. v. Smith, 70 F. (2d) 564; reversed on other grounds, Smith v. Snow, 294 U. S. 1; Smith v. Street, et al., D. C. of Minn., May 1, 1935; Smith v. Simms, et al., D. C. of S. D. of Ind.; March 8, 1935; Waxham v. Smith & Buckeye, 70 F. (2d) 457; affrd. 294 U. S. 20; Buckeye v. Miller Hatcheries, D. C. E. D. of Mo., March 6, 1929; affrd. 41 F. (2d) 619; Bolling v. Buckeye, 33 F. (2d) 347; reversed on other grounds 46 F. (2d) 965; Smith & Buckeye v. Jensma, et al., 1 F. Supp. 999. This Court also is of the opinion that the patent is valid.

In support of its defense of non-infringement the defendant puts forward as differences between its product and the patent structure that it uses a separate hatcher for the last three days of the hatching period thereby failing to use the complete result of the process and that it uses the principle of agitation to circulate the air rather than the forced current of the patent.

The defense of agitation of air was used in Smith v. Snow, supra. There the infringing device had fans or propellers located at either side of the chamber about mid way of its height, near the wall and between the wall and tiers of egg trays. The air was thrown off the ends of the propeller blades toward the top, bottom and adjacent ends of the [fol. 1559] chamber, deflected by the ceiling, floors and ends of the chamber into a central corridor and drawn through the tiers of eggs to the propellers, moving continuously under the impetus of the constant operation of the propellers. The Supreme Court rejected the contention that the air "goes where it 'listeth' ", finding "that there is a continuous movement of air from the blades of respondent's propellers toward the top and bottom and sides of the chamber thence to the corridor and thence through the tiers

of egg trays back to the propellers and that this movement achieves the purpose • • • 'to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature.' • • • That there is a mixture of the air and some confusion of its movement in the corridor, and that at different levels within the space occupied by the tiers of trays the movement is not in the same direction, is immaterial."

Defendant's device is so constructed that the air is drawn upward through the tiers of egg trays to the top of the cabinet where it is thrown from the tips of the impeller blades toward the front and back of the compartment and carried downward through channels to the base of the compartment. At this point defendant has provided its device with a turbulator or agitator, a flat blade rotating air mixer which revolves at a slower rate of speed than the impeller. The purposes are to mix the fresh air which comes in at the base of the machine into the flow of air within the machine so as to secure an even temperature throughout the compartment, and to break up the current of air so that as it rises through the tiers of egg trays it will have no defined [fol. 1560] path. In plaintiff's device the fresh air is mixed into the air flow of the machine by the propeller. This is impracticable in defendant's machine, because the impeller is at the top while the fresh air inlets are at the base of the machine. Experiments at the trial showed that the turbulator affected air currents in only a few of the lowest trays of eggs and that from that point upward the air flow tended to travel in definite paths. In Smith vs. Snow, supra, it was stated that the claim does not require "that the propelled current • • • should be guided, controlled or directed by any particular means or in any particular manner other than it should be of sufficient velocity to produce the results prescribed by the claim". The claim prescribes that the current shall be "of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature". It is obvious that the defendant has a current of air in its device inasmuch as the air passes and re-passes over the eggs being replaced by fresh air to the extent of 1 to 3 per cent. only with each circuit of the chamber. The air flow is a current in a manner to bring it within the claims of the patent despite the fact that it is churned at one point in the circuit. The

operation of the defendant's device is such that the current is of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature.

The defendant would require an agitator in its device regardless of any purpose to break up the flow of the current of air in the chamber, since its inlets for fresh air are at the base of the machine and the flow of fresh air into the [fol. 1561] machine would not be broken up until it reached the top of the chamber after passing through the tiers of egg trays, thus subjecting certain of the eggs to a cooling air current. Thus the so-called agitator is primarily a mixer. That it incidentally churns the air so that the even flow is disarranged at one point in the circuit is insufficient to take the device without the scope of the patent. Plaintiff by placing its inlets over the propeller immediately breaks up the flow of fresh air into the machine and needs no second mixing device. It appears to this Court that the defendant is attempting to avoid infringement of the method claims 1, 2 and 3 of the patent, merely by varying the details of the apparatus by which they make use of them, which, of course, is not to be permitted. Snow v. Smith, supra; citing Cochrane v. Deener, 94 U. S. 780, at 788; Tilghman v. Proctor, 102 U. S. 707, at 730 and 731. See also Waxham v. Smith, supra, and cases there cited. Defendant also infringes the structural claim, claim 5 of the patent, since his device reads directly under the claim.

There is no question but that the defendant uses the method of the Smith patent up to the time that the eggs are removed to a separate compartment for the last three days of the incubation period and the emergence of the chick. The removal of the eggs previous to the completion of the incubation period will not avoid infringement, the defendant having used the principles of the Smith invention but to less than their full extent. Mills Novelty Co. v. Monarch Tool & Mfg. Co., 76 F. (2d) 653; Telescope Cot Bed Co. v. Gold Metal Camp Furniture Co., 229 F. 1002; Nachman Spring-Filled Corp. v. Spring Products Corp., [fol. 1562] 68 F. (2d) 829. This defense was rejected also in Smith v. Hall, supra, and Smith v. Simms, supra.

The patent is valid and infringed. The plaintiff may have an accounting for damages resulting from the infringe-

ment. Findings of Fact which may be submitted will be considered a part of this opinion.

John Knight, United States District Judge.

June 28, 1935.

IN THE UNITED STATES DISTRICT COURT

[Title omitted]

FINDINGS OF FACT AND CONCLUSIONS OF LAW—Filed July 5, 1935

This cause having come on for hearing and having been [fol. 1563] heard in open Court and upon arguments and briefs submitted by counsel for the parties, and this Court being fully advised in the premises now states the following:

Findings of Fact

(1) The patent in suit was assigned by the plaintiff Samuel B. Smith to The Buckeye Incubator Company, which Company reassigned the patent to the plaintiff by assignment dated April 29, 1927, the Buckeye Company being granted, by an instrument of the same date, the exclusive license to manufacture and sell incubators not to exceed 16,500 egg capacity.

(2) The said assignment of April 29, 1927, granted to the plaintiff the right to the recovery of damages and profits for past infringement, and by an agreement of the same date the plaintiff was given the right to prosecute all infringers, paying all expenses thereof and receiving all recoveries.

(3) The Buckeye Company is not a co-owner of the patent in suit, nor is it the owner of an undivided part or share of the entire patent right, but was the mere owner of a license less than exclusive.

(4) That the plaintiff, Samuel B. Smith, is the owner of the title to the patent in suit.

(5) That the defendant, James Manufacturing Company, is a corporation of Wisconsin, and has and maintains

a regular and established office and place of business at Elmira, New York, within the Western District of New [fol. 1564] York, wherein, and elsewhere, it is and has been, for a period within six years prior to the filing of the Bill of Complaint, engaged in the manufacture and sale of Incubators.

(6) That the defendant, Elmira Hatcheries, Inc., is a corporation of New York, located and doing business at Elmira, New York, within the Western District of New York, where it is engaged in the commercial incubation and hatching of eggs.

(7) By stipulation of counsel, suits against the said defendants have been consolidated.

(8) Claims 1, 2, 3 and 5 are charged to be infringed by the manufacture, sale and use of "Jamesway Incubators".

(9) That none of the prior art patents or publications, or none of the alleged prior uses, including the so-called Hastings' prior use, anticipate either the process or apparatus of the patent, and that the patent and claims 1, 2, 3 and 5 thereof are valid.

(10) That the defendants do not avoid infringement of claims 1, 2 and 3 by the use of a separate hatcher for the last three days of the hatching period, for the defendants use the method of the Smith patent up to the time that the eggs are removed to a separate compartment for the last three days of the incubation period and the emergence of the chick.

(11) In defendants' incubators the air is propelled in [fol. 1565] current form by impellers which throw the air toward the front and back of the compartment, from whence it is carried through channels to the base and drawn back through the egg compartment in a continuous circuit, the air being replaced by from 1 to 3 percent. of fresh air in each circuit.

(12) The defendants do not avoid infringement by the presence of the agitator at the base of the incubating cabinet, the purpose of which is to mix the incoming fresh air with the circulating heated air, and that, while this agitator incidentally churns the air at one point in the circuit, the defendants' incubators have a current movement of air

over the eggs, and any departure from the general current movement is at a few points only and is immaterial.

(13) That the structure of defendants' incubators reads directly upon claim 5 of the patent.

Conclusions of Law

I

The patent in suit is valid.

The plaintiff, Samuel B. Smith, is the owner of the patent, and The Buckeye Incubator Company is the owner of a license less than exclusive.

III

That The Buckeye Incubator Company is not a co-owner of the patent and is not a necessary party, and defendants' motion to dismiss based upon such allegations, is denied.

[fol. 1566]

IV

The defendant, James Manufacturing Company, has infringed upon claims 1, 2, 3 and 5 by the manufacture and sale in this District, and elsewhere, incubators known as the "Jamesway Incubators".

V

That the defendant, Elmira Hatcheries, Inc., has infringed upon Claims 1, 2, 3 and 5 by the use in this District, of incubators known as the "Jamesway Incubators".

VI

That a decree shall be entered herein finding the patent in suit unanticipated, valid, and claims 1, 2, 3 and 5 hereof infringed.

VII

The patent in suit having expired April 16, 1935, no injunction shall issue.

John Knight, U. S. D. J.

July —, 1935.

[fol. 1567] IN THE UNITED STATES DISTRICT COURT

[Title omitted]

INTERLOCUTORY DECREE—Filed July 18, 1935

In accordance with the Opinion and Findings of Fact and Conclusions of Law entered in this cause today, it is hereby Ordered, Adjudged and Decreed:

I

That the patent in suit No. 1,262,860 is valid particularly as to claims 1, 2, 3 and 5 thereof, and that plaintiff was the first, original and sole inventor thereof.

II

That defendants' motions to dismiss on the grounds that title was not proved and that The Buckeye Incubator Company was not made a party, are dismissed.

[fol. 1568] III

That the defendant, James Manufacturing Company, has infringed upon claims 1, 2, 3 and 5 thereof, by the manufacture and sale of "Jamesway Incubators".

IV

That the defendant, Elmira Hatcheries, Inc., has infringed upon claims 1, 2, 3 and 5 thereof, by the use of "Jamesway Incubators".

V

That the plaintiff recover from defendants the profits, gains and advantages which defendants have each and severally derived or received by reason of the aforesaid infringements, and that the plaintiff recover all damages sustained by reason thereof.

VI

That this case be referred to — as Special Master in Chancery, to take evidence and to make his report and findings of the defendants' gains, advantages and profits due to the manufacture, sale and use of the Jamesway incubators found to be an infringement herein, and of the plain-

tiff's damages occasioned by the said infringements, and to make such reports and findings in the premises as may appear proper and just.

VII

That the plaintiff recover from the defendants the costs herein to be taxed and have judgment and execution therefor.

John Knight, U. S. D. J.

July 18, 1935.

[fol. 1569] UNITED STATES DISTRICT COURT

[Title omitted]

PETITION FOR APPEAL

The above named defendants, James Manufacturing Company and Elmira Hatcheries, Inc., feeling themselves aggrieved by the decree filed herein on or about July 18, 1935, hereby appeal from said decree to the United States Circuit Court of Appeals for the Second Circuit, for the reasons specified in the assignment of errors which is filed herewith; and pray that this appeal may be allowed and that citation issue as provided by law.

Toulmin and Toulmin, Counsel for Plaintiff. John S. Powers, Solicitor for Plaintiff.

[fol. 1570] UNITED STATES DISTRICT COURT

[Title omitted]

ORDER ALLOWING APPEAL

These causes coming on to be heard upon defendants' prayer for an appeal to the United States Circuit Court of Appeals for the Second Judicial Circuit from the interlocutory decree entered herein by this Court on or about the 18th day of July, 1935, and the defendants having filed their assignment of errors in due form with said prayer for appeal:

It is Ordered that said prayer be and the same is hereby allowed upon defendants filing herein the usual appeal bond in the sum of $1500.00, to be filed within five days from the date hereof.

It is Further Ordered that accounting proceedings provided for in the above interlocutory decree be and the same hereby are suspended, pending the disposition of said appeal.

John Knight, United States Judge.

Dated August 13, 1935.

[fol. 1571] UNITED STATES DISTRICT COURT

[Title omitted]

ASSIGNMENTS OF ERROR

Now comes the James Manufacturing Company and Elmira Hatcheries, Inc., defendants, in the above-entitled case, by their counsel, and, having prayed for an appeal to the United States Circuit Court of Appeals for the Second Circuit from the judgment and decree entered in this case by the District Court for the Western District of New York, on or about the 18th day of July, 1935, which adjudicates that the plaintiff's patent is valid and that claims 1, 2, 3 and 5 have been infringed by defendants, now say that said decree and judgment are erroneous and against the just rights of said defendants for the following reasons:

Court's Findings of Fact

1. That the District Court erred in Finding 2 that plaintiff could recover profits and damages from defendants in [fol. 1572] this case, by reason of an agreement of date April 29, 1927, between the plaintiff and his licensee, The Buckeye Incubator Company; whereas when plaintiff brought this suit he had parted with all interest and rights under the patent in suit as to incubators of capacity of 16,500 eggs and less; and whereas these defendants' incubators involved herein were all of egg capacity under 16,500—usually averaging about 5,000 eggs capacity in each incubator.

2. That the District Court erred in Finding 3 that The Buckeye Incubator Company, plaintiff's said licensee, was not a co-owner in the patent in suit, nor the owner of an undivided part or share in the entire patent, but was a "mere owner of a license less than exclusive"; whereas all right, title and interest in the patent in suit as to the exclusive manufacture, use and/or sale of incubators of egg capacity of 16,500 eggs, and less, covered by the patent to Samuel B. Smith, Smith conveyed away, prior to the suit, to The Buckeye Incubator Company in and by its said exclusive license, then and now in full force and effect.

3. That the District Court erred in its Finding 4 to the effect that Smith, the plaintiff, "is the owner of the title to the patent in suit"; whereas Smith is not the owner of any right of manufacture, use and/or sale of incubators covered by the patent of capacity of 16,500 eggs or less, in each machine; and whereas also this license from Smith to The Buckeye Incubator Company was in legal effect an assignment of an interest in the patent for that it was ex-
[fol. 1573] clusive of the patentee and all others as to machines of 16,500 egg capacity or less.

4. That the District Court in Finding 9 erred in finding the Smith patent and claims 1, 2, 3 and 5 thereof were valid over the prior art and prior uses proved in this case; whereas the Court should have found on the evidence in this case that particularly, the Hastings prior use, and the prior patents and/or publications proved in defense, were sufficient to have required a contrary finding.

5. That the District Court erred in Finding 10 holding that defendants did not avoid infringement of claims 1, 2 and 3 of the patent in suit by the use of a Separate Hatcher or apparatus within which to hatch the chickens after the period of incubation; where as defendants merely incubated the eggs in their incubators for the incubating period of 17 to 18 days; and did not carry the heat arising from the eggs in the later hatching stage to the eggs in and during the incubation period, as done in the Smith patent; and whereas the Separate Hatcher of defendants has no communication with their incubator, and forms no part thereof, but is a separate structure; and whereas also any of the diseases that commonly arise during the hatching period, are prevented from reaching and infecting the eggs during

the incubation period because of defendants' Separate Hatcher, and because of their method of incubating and hatching being performed in non-communicating structures.

6. That the District Court erred in its Finding 11 to the effect that in defendants' incubators the air was propelled [fol. 1574] in currents, and that these currents passed amongst the eggs in the incubating chamber, and moved in that chamber back and forth in a "continuous circuit"; whereas in defendants' method and apparatus the air moved through the incubating chamber in a state of agitation, churning, or commotion, which numerous United States Circuit Courts of Appeal have decided was not the method of the Smith patent; and whereas also in defendants' apparatus the eggs during the hatching period of three days are not subjected to any air movements at all, the air in the Separate Hatcher being quiet and undisturbed, and cut off from reaching the eggs under incubation or from carrying to the incubating eggs any diseases from this Separate Hatcher.

7. That the District Court erred in its Finding 12 to the effect that defendants do not avoid infringement by their air agitator in the incubating cabinet, the purpose of which is to mix the incoming fresh air with the circulating heated air, and that while defendants' agitator churns the air at one point, still that defendants' incubators have a current of air which moves over the eggs; whereas in defendants' incubator the air amongst the eggs and in the egg trays is in an agitated, churned or stirred condition, without any defined movement at all, as in the case of currents driven by high speed pressure fans; and whereas the air in its hatcher is not moved at all by any mechanical means and is not allowed to communicate with the eggs in the incubating apparatus because of the transmission of diseases which arise during the hatching period; separate [fol. 1575] hatching being the advantageous prevailing method which has arisen long after the Smith patent was issued.

8. That the District Court in its Finding 13 erred in stating that the structure of defendants' incubators "reads" directly on Claim 5 of the patent in suit.

Conclusions of Law

9. That the Court erred in Conclusion I to the effect that the patent in suit is valid; whereas on the record in this case it is invalid because of the fuller and more effective defenses contained in this record.

10. That the District Court erred in its Conclusion II that Samuel B. Smith is the owner of the patent and The Buckeye Incubator Co. is the owner of a "license less than exclusive"; whereas the fact is that said Smith has parted with that part of the ownership covered by the patent which relates to incubators each of the capacity of 16,500 eggs or less; and has granted an exclusive license to The Buckeye Incubator Co. as to the manufacture, use and sale of all such restricted capacity incubators.

11. That the District Court erred in its Conclusion III that The Buckeye Incubator Co. "is not a co-owner of the patent and is not a necessary party", with reference to which defendants' motion to dismiss upon these grounds was denied; whereas said licensee is a co-owner in the [fol. 1576] statutory property rights of the patent in respect to the exclusive and sole ownership as to manufacture, use and sale of incubators of said 16,500 egg capacity, or less.

12. That the District Court erred in its Conclusion IV that The James Manufacturing Company "has infringed upon claims 1, 2, 3 and 5, by the manufacture and sale" of incubators known as the "Jamesway" incubators; whereas claims 1, 2 and 3 are method claims relating to the operation of the machine of the Smith patent and can only be infringed by the use of an apparatus which practice such method; and whereas claim 5 is for the construction of an incubator which could only be infringed by the manufacture, sale or use of an apparatus substantially corresponding in construction with that embodied in the Smith patent, and having substantially the same mode of operation as the structure covered by claim 5 of the patent—all of which conditions are not true of these James incubators.

13. That the District Court erred in its Conclusion V that the defendant Elmira Hatcheries, Inc., has infringed claims 1, 2, 3 and 5 by the use of the Jamesway incubators;

whereas the Jamesway incubators do not operate according to the mode of operation called for in claims 1, 2 and 3, and are not of the structural construction set forth in claim 5, as the Jamesway incubators do not "hatch" chickens, as stated in said claims, but only incubate them, the hatching being performed in another apparatus not in communication with the incubator.

[fol. 1577] Opinion of the Court

14. That the District Court erred in its Opinion in holding that "The assignment from Buckeye to Smith precludes a finding that they are co-owners of title to the patent. The assignment is properly drawn and purports to convey the entire title, reserving only a license to the assignor"; whereas the license and assignment together constitute a co-ownership in the patent, divided thus: All the rights to Smith in the patent save the rights pertaining to the manufacture, sale and use of incubators of 16,500 egg capacity, or less; and all the rights in The Buckeye Incubator Company to manufacture, use and sell all incubators of the lesser capacities above stated. There are two title papers, not one only, as mentioned by the Court.

15. That the District Court erred in holding that The Buckeye Incubator Company, the licensee thus referred to, need not be joined as a party plaintiff and "co-owner by reason of its exclusive license to produce the smaller sizes of incubators under the patent"; whereas in this case no incubators of defendants come within the egg capacities reserved by Smith, but come only within the egg capacities conveyed away by Smith to his licensee.

16. That the District Court erred in holding adversely to defendants' position that the "license here in question is a transfer of an undivided part or share of the exclusive right given by the patent"; whereas letters patent comprise three classes of exclusive rights—the exclusive right [fol. 1578] to make, the exclusive right to use, and the exclusive right to sell, wherefore The Buckeye Incubator Company, the absent but necessary party, acquired an exclusive interest in all three of these rights as applied to incubators of 16,500 egg capacity or less.

17. That the District Court erred in holding: "I find, therefore, that the license to Buckeye was a license less

than exclusive and that the Buckeye Incubator Company need not be joined as a party in this action''; whereas under the exclusive license, The Buckeye Incubator Company was the sole owner of the three exclusive statutory rights, to make, use and sell the smaller sizes of incubators, as to which Smith is without any title.

18. That the District Court erred in holding that "• • • proof of title in the plaintiff has been sufficiently made''; whereas on this record there is no proof of any title in the plaintiff Smith to the patent with respect to the smaller sizes of incubators made and sold by defendants.

19. That the District Court erred in denying defendants' motion that the Bill be dismissed because "Plaintiff has no title'' to the patent in suit "except as to incubators which have egg capacities of more than 16,500 eggs''; whereas defendants' incubators are of egg capacity less than 16,500 eggs, to-wit, substantially 5,000.

20. That the District Court erred in holding that: "This court also is of the opinion that the patent is valid''; whereas the record in this case on behalf of the defendants [fol. 1579] is different in its facts and legal effect from the records in any of the preceding suits on the Smith patent here in question, with reference particularly to anticipating prior uses for the first time completely proved on this record.

21. That the District Court erred in its understanding and statement of the operation of defendants' incubators, to-wit: "Experiments at the trial showed that the turbulator affected air currents in only a few of the lowest trays of eggs and that from that point upward the air flow tended to travel in definite paths''; whereas the preponderance and weight of the evidence in this case, confirmed by the physical structure and mechanism of defendants' incubators, is that there are no defined or other currents of air which move "in definite paths'', or otherwise, in the incubating chamber of defendants' incubators, but, to the contrary, the air in the incubating chamber is stirred, churned, agitated, and put in general commotion, moving through the chamber in the nature of a cloud.

22. That the District Court erred in holding in its Opinion that: "The air flow (in defendants' incubators) is a current in a manner to bring it within the claims of the patent despite the fact that it is churned at one point in the circuit"; whereas the preponderance and weight of the oral evidence, and the physical mechanism and mode of operation in defendants' machine, established the contrary to this finding.

23. That the District Court erred in its Opinion in stating that: "It appears to this court that the defendant is at- [fol. 1580] tempting to avoid infringement of the method claims 1, 2 and 3 of the patent, merely by varying the details of the apparatus by which they make use of them, which, of course, is not to be permitted"; whereas, the alleged "details" of the "apparatus" of defendants are in structure and mode of operation so far different from the recitals and meaning of claims 1, 2 and 3, that the Government of the United States has granted letters patent No. 1,939,908, dated December 19, 1933, to George T. Markey, patentee, on these incubators of defendants, having found these incubators to be patentably different from the prior art including the patent here in suit.

24. That the District Court erred in its Opinion in stating that: "Defendant also infringes the structural claim, claim 5 of the patent, since his device reads directly under the claim"; whereas the combination of Smith's claim 5 is not to be found in defendants' incubators; and whereas defendants' incubators are the subject of independent patents granted by the Government of the United States.

25. That the District Court erred in its Opinion in holding: "There is no question but that the defendant uses the method of the Smith patent up to the time that the eggs are removed to a separate compartment for the *last three days of the incubation period* and the emergence of the chick"; whereas (a) there is no incubation process after the 17½th to 18th day, as the chicks are then a complete and living organism and need only to (b) grow, and (c) crack their shells and emerge. Steps (b) and (c) are [fol. 1581] not performed in defendants' incubator, but the eggs are entirely removed from the incubator. The last three days are the hatching period, and not the incubation

period, which is concluded before the hatching operation is begun in defendants' practice. The hatching is performed by the defendants in a separate apparatus known as the "Separate Hatcher", which is not in communication with the incubator.

26. The District Court erred in its Opinion in holding that: "The patent is valid and infringed."

27. The District Court erred in ruling that, "The plaintiff may have an accounting for damages resulting from the infringement"; whereas Smith, the plaintiff, has no right of any character to recover where, as in this case, the defendants' incubators are of egg capacity of 16,500 or less; that phase of the use of the patent not belonging to Smith.

Wherefore, the defendants, James Manufacturing Company and Elmira Hatcheries, Inc., pray that said judgment and decree may be modified accordingly.

H. A. Toulmin, H. A. Toulmin, Jr., John S. Powers,
Counsel for Defendants.

Dayton, Ohio, August 13th, 1935.

[fols. 1582-1598] Bond on Appeal for $1500, approved and filed Aug. 13, 1935, omitted in printing.

[fols. 1599 & 1600] Citation, in usual form, showing service on Chas. A. Parker, omitted in printing.

[fol. 1601] UNITED STATES DISTRICT COURT

[Title omitted]

ORDER EXTENDING TIME TO FILE RECORD

Upon application of the defendants in the above entitled cause, it is hereby ordered that the time for filing the Transcript of the Record on Appeal herein in the Circuit Court of Appeals for the Second Circuit and the return day of

the citation issued herein is enlarged and extended to and including the 13th day of October, 1935.

John Knight, United States Judge.

[fol. 1602] UNITED STATES DISTRICT COURT

[Title omitted]

STIPULATION AND ORDER

It is stipulated between counsel for all the parties herein, subject to the approval of the court, that the time for filing the transcript of record on appeal herein in the Circuit Court of Appeals for the Second Circuit and the return day of citation issued herein is enlarged and extended to and including the 13th day of November, 1935.

A. L. Ely, Attorney for the Plaintiff. Toulmin & Toulmin, Attorneys for the Defendants.

Approved this — day of October, 1935. John Knight, U. S. Judge.

[fol. 1603] UNITED STATES DISTRICT COURT

[Title omitted]

STIPULATION

It is stipulated and agreed by and between counsel for the parties in the above entitled cause, subject to the approval of the Court, as follows:

1. That the time for filing the appellants' præcipe and statement of evidence required by Equity Rule 75, together with any objections which may be made, and/or amendments or changes which may be proposed therein, be and hereby is extended to and including November 1, 1935.

2. That the time within which plaintiff and appellee may file his præcipe indicating additional portions of the record desired by him, as provided in Paragraph (a) of Rule 75, be and hereby is extended to and including November 5, 1935.

[fol. 1604] 3. That the time for filing the transcript of record in the Court of Appeals and the return day of the citation be and hereby is enlarged and extended to and including November 30, 1935.

4. That the case entitled Smith vs. Hall now pending on appeal in the Court of Appeals for the Second Circuit, being a suit involving the same patent as that sued on in the above entitled cause, with the same counsel for appellee in both actions, counsel for the appellee in said case of Smith vs. Hall agrees to join with counsel for appellants herein in a request to said Court of Appeals to have the above entitled cause advanced on the Docket of said Court of Appeals, so that the said cases of Smith vs. Hall and Smith vs. James Manufacturing Company and Elmira Hatcheries, Incorporated, may be orally argued and presented to the said Court of Appeals at the same time.

James Manufacturing Company, by (Signed) Toulmin & Toulmin, Attorneys. Elmira Hatcheries, Incorporated, (by (Signed) Toulmin & Toulmin, Attorneys. Samuel B. Smith, by (Signed) A. L. Ely, Attorney.

Approved this — day of October, 1935. —— ——, U. S. District Judge.

[fol. 1605] IN THE UNITED STATES DISTRICT COURT

[Title omitted]

ORDER

Whereas it has been represented to this Honorable Court in the above entitled case that the trial engagements of Mr. A. L. Ely, principal attorney for the plaintiff in this case, will prevent his early consideration of the narrative statement of evidence filed in this case by the defendant's attorneys for approval, or the preparation of objections to the same, or the preparation of an amendment to the præcipe covering additional portions of the record which the plaintiff may wish to have included in the appeal record, within the time now set by stipulation, and the record and narrative statement of evidence in this case being volu-

[fol. 1606] minous, and there appearing no reason why the defendant will be materially damaged by the delay, and the request of the defendant appearing reasonable,

Now Therefore, upon the application of counsel for the plaintiff, as explained by the attached affidavit of Max D. Farmer, it is hereby ordered, adjudged and decreed that the time within which the plaintiff may file objections or amendments to the narrative statement of evidence in the above entitled case and within which the plaintiff may file amendments to the præcipe indicating additional portions of the record which he may desire to have included in the record, be and hereby is extended to and including November 15th, 1935, and that appellant's time within which to file the transcript of record, be and hereby is extended to and including December 15th, 1935.

(Sgd.) John Knight, U. S. D. J.

October 29, 1935.

[fol. 1607] In the United States District Court

[Title omitted]

Affidavit of Max D. Farmer

State of New York,
County of Erie, ss:

Max D. Farmer, being duly sworn, deposes and says:

I am attorney at law and one of the solicitors of record for the plaintiff in the above entitled case. I represent, as one of the local solicitors, Mr. A. L. Ely of Cleveland, Ohio, who is in direct charge of plaintiff's interests in the above entitled cause.

I am informed by Mr. Ely's office in Cleveland that Mr. Ely's present engagements include a trial at Grand Rapids, Michigan, which was scheduled to start on October 25th, another trial scheduled to start at Cleveland on October 29th [fol. 1608] which may last a week or more, and another trial scheduled to start at Kansas City, Missouri, on November 8th. I am also informed by Mr. Ely's office that the narrative statement of the testimony contains approximately 1323 pages which with a large number of the exhibits and a very

large record, will require at least several days of Mr. Ely's time to prepare his objections, and that Mr. Ely is unable to give the necessary time for this preparation until the conclusion of the trial scheduled to start at Kansas City on November 5th.

I am also informed by Mr. Ely's office that Mr. Ely is spending as much time on this matter as possible in order to expedite the same and in the letter to defendant's attorneys dated October 26, 1935, Mr. Ely supplied defendant's attorneys with his objections to the præcipe and informed them that if they would amend the præcipe as indicated in his letter, he would sign it, which indicates that Mr. Ely is doing all he can to expedite the completion of the appeal record, but that to compare a narrative statement of record of over 1300 pages with a large and voluminous trial record cannot be properly done within the time provided for by the stipulation.

The patent, having expired, no damage to the defendant will arise by reason of the extension of time in accordance with the attached order.

Max D. Farmer.

Subscribed and sworn to before me this 29th day of October, 1935. (Sgd.) Ponsy C. Hinchey, Notary Public. (Seal.)

[fol. 1609] IN THE UNITED STATES DISTRICT COURT

[Title omitted]

ORDER

Whereas it has been represented to this Honorable Court in the above entitled consolidated cases that the Court engagements of Mr. A. L. Ely, the principal attorney for the plaintiff in this case, and other legal matters which cannot possibly be postponed or delayed, have prevented full consideration of the entire narrative statement of evidence filed in this case by defendants' attorneys and it being apparent from the attached affidavit that the plaintiff's attorney will require at least until December 2nd to complete the checking of the narrative statement of evidence and the preparation of corrections and additions thereto, and the plaintiff's at-

torney having shown that he is proceeding with reasonable diligence by supplying his desired corrections and additions to the defendants' attorneys as rapidly as he checks the record and prepares his corrections and additions, and there appearing no reason why the defendant will be materially damaged by the delay, and the request of the plaintiff appearing reasonable,

[fol. 1610] Now Therefore, upon the application of counsel for plaintiff, it is hereby ordered, adjudged and decreed that the time within which the plaintiff may file objections, corrections or amendments to the narrative statement of evidence in the above entitled consolidated cases, be and hereby is extended to and including December 2d, 1935, and that appellants' time within which to file the transcript of record be and hereby is extended to and including January 2d, 1936.

(Sgd.) John Knight, U. S. D. J.

November 8, 1935.

IN THE UNITED STATES DISTRICT COURT

[Title omitted]

AFFIDAVIT OF MAX D. FARMER

STATE OF NEW YORK,
County of Erie, ss:

Max D. Farmer, being duly sworn, deposes and says:

[fol. 1611] I am an attorney at law and one of the solicitors of record for the plaintiff in the above entitled case. I represent, as one of the local solicitors, Mr. A. L. Ely of Cleveland, Ohio, who is in direct charge of plaintiff's interest in the above entitled cause.

I am informed by Mr. Ely that he is working on the checking of the narrative statement of evidence in the above entitled case as rapidly as possible and with all the time available outside of his essential court engagements, and has finished checking the first volume of the transcript of the record which includes page 462 and has submitted the corrections therefore to Toulmin & Toulmin, attorneys for defendants, so as to give the printer considerable material to

work on. Since the record contains over 1320 pages and since the corrections to the first 460 pages took over twenty legal size pages of corrections and additions, it is apparent that it will be impossible, even with diligent effort, to complete the narrative statement of record within the time now set, to wit, before November 15, 1935, and that it will require at least until December 2d to complete the checking of the narrative statement of the record and the preparation of the corrections and additions thereto.

The patent having expired, no damage to the defendant will arise by reason of the extension of time in accordance with the attached order.

Max D. Farmer.

Subscribed and sworn to before me this 8th day of November, 1935. (Sgd.) Mildred J. Pitman, Notary Public. (Seal.)

[fol. 1612] UNITED STATES DISTRICT COURT

[Title omitted]

PRÆCIPE

To the Clerk of the Court:

Now come the defendants in the above entitled consolidated causes and request that you prepare a transcript of record of said causes as consolidated and transmit the same to the United States Circuit Court of Appeals for the Second Circuit, on the appeal of the defendants therein, as soon as practical, incorporating and including in said transcript the following portions of the record:

1. The Bill of Complaint filed in Samuel B. Smith vs. James Manufacturing Company, Equity No. 253.

2. The Answer filed by the defendant in Samuel B. Smith vs. James Manufacturing Company, Equity No. 253.

3. Amended Answer filed by the Defendant in Samuel B. Smith vs. James Manufacturing Company, Equity No. 253.

[fol. 1613] 4. Plaintiff's motion for Bill of Particulars filed in Samuel B. Smith vs. James Manufacturing Com-

pany, Equity No. 253, omitting the part thereof under the heading "Remarks".

5. Answer of Defendant to Plaintiff's Motion for Bill of Particulars filed in Samuel B. Smith vs. James Manufacturing Company, Equity No. 253.

6. Amended Answers of Defendant to Plaintiff's motion for particulars filed in Samuel B. Smith vs. James Manufacturing Company, Equity No. 253.

7. Motion of Plaintiff for Supplemental Bill of Particulars filed in Samuel B. Smith vs. James Manufacturing Company, Equity No. 253.

8. Defendant's Response to Plaintiff's Motion for Supplemental Bill of Particulars filed in Samuel B. Smith vs. James Manufacturing Company, Equity No. 253.

9. Notice of Prior Uses and Publications Defendant will rely on and demand under Equity Rule 58, filed by the Defendant in Samuel B. Smith vs. James Manufacturing Company, Equity No. 253, omitting therefrom the publications of the article appearing in the February, 1912, issue of "Poultry Culture", the index cover page and pages 630 and 631 of the November, 1912, issue of "Popular Mechanics" magazine and the July 6, 1912, issue of "Electrical World", with the notation that these three publications appear as Defendant's Exhibits Nos. 23, 24 and 25, respectively.

[fol. 1614] 10. Stipulation consolidating the cases of Samuel B. Smith vs. James Manufacturing Company, Equity No. 253 and Samuel B. Smith vs. Elmira Hatcheries, Incorporated, Equity No. 254.

11. Stipulation filed in Samuel B. Smith vs. Elmira Hatcheries, Incorporated, Equity No. 254, agreeing to consolidate the two cases of Samuel B. Smith vs. James Manufacturing Company, Equity No. 253 and Samuel B. Smith vs. Elmira Hatcheries, Incorporated, Equity No. 254 and that the case will hereafter be entitled Samuel B. Smith vs. James Manufacturing Company and Elmira Hatcheries, Incorporated, Equity No. 253 and that the record on appeal may be limited as counsel may agree to the papers in one cause.

12. Stipulation filed on or about 23rd day of September, 1935, limiting the record on appeal to papers filed in the case of Samuel B. Smith vs. James Manufacturing Company, Equity No. 253.

13. Defendant's motion to dismiss the Bill of Complaint in this case.

14. Narrative Statement of Evidence.

15. Memorandum Opinion of Judge John Knight.

16. Findings of fact and conclusions of law by Judge John Knight.

17. Interlocutory decree filed on or about July 18, 1935.

18. Petition for appeal filed August 13, 1935.

19. Order granting appeal, fixing appeal bond in the amount of $1500 and directing suspension of accounting proceedings pending appeal filed August 13, 1935.

[fol. 1615] 20. Appeal bond approved by District Court filed on or about August 13, 1935.

21. Citation with acknowledgment of service thereon filed on or about August 13, 1935.

22. Assignments of error filed on or about August 13, 1935.

23. Order extending time for filing transcript of record and enlarging return day of citation to, and inclusive of October 13, 1935, filed on or about August 13.

24. Stipulation approved by Court further extending time for filing transcript of record and enlarging return day of citation to, and inclusive of, 13th day of November, 1935, filed on or about 5th day of October, 1935.

25. This praecipe.

26. Certificate of clerk as to correctness of record.

27. The following exhibits introduced in evidence before the District Court.

Plaintiff's Exhibits

1. Plaintiff's Exhibit No. 1, the Smith patent in suit, No. 1,262,860.

2. Plaintiff's Exhibit No. 3, heat graph of hatching egg.

3. Plaintiff's Exhibit No. 14, vertical cross-section of Jamesway machine.

4. Plaintiff's Exhibit No. 15, vertical longitudinal cross-section of Jamesway incubator.

5. Plaintiff's Exhibit No. 32, assignment from Buckeye Incubator Company to Samuel B. Smith.

[fol. 1616] 6. Plaintiff's Exhibit No. 33, license agreement between Samuel B. Smith and Buckeye Incubator Company.

Plaintiff's Exhibits—Continued

7. Plaintiff's Exhibit No. 34, contract between Samuel B. Smith and Buckeye Incubator Company.

8. Plaintiff's Exhibit I, being certified copy of abandoned Hastings application for patent that was formerly exhibit D-E, in the Cooley case.

Defendant's Exhibits

1. Defendant's Exhibit No. 8, File Wrapper of Smith patent in suit, No. 1,262,860.

2. Defendant's Exhibit No. 9, English translation of Stulik (German) patent No. 155,917.

3. The following patents from the volume of prior art pleaded, being Defendant's Exhibit No. 10.

(a) Woods patent, No. 656,760, dated August 28, 1900, also marking on this patent the following: "also introduced as Defendant's Exhibit No. 47".

(b) Goldstein patent No. 1,137,752, dated May 4, 1915.

(c) Meschter patent No. 347,946, dated August 24, 1886.

(d) Guerin patent No. 3,019, dated March 30, 1843.

(e) McAslan patent No. 540,107, dated May 28, 1895.

(f) Bell patent No. 691,837, dated January 28, 1902.

(g) Perkins patent No. 798,697, dated September 5, 1905.

(h) Peters patent No. 843,909 dated February 12, 1907. [fol. 1617] (i) Osborn patent No. 1,144,232, dated June 22, 1915.

(j) Fullington patent No. 1,205,445, dated November 21, 1916, marking on the same: "also introduced as part of Plaintiff's Exhibit No. 49".

(k) Gardner (British) patent No. 10,288 of 1887.

(l) Stulik (German) patent No. 155,917, dated November 11, 1904.

(m) Peck patent No. 917,483, dated April 6, 1909.

(n) Freas patent No. 1,165,958, dated December 28, 1915.

(o) Lumpp patent No. 280,490, dated July 3, 1883.

(p) Rogers patent No. 327,900, dated August 6, 1885.

(q) Verna patent No. 891,019, dated June 16, 1908.

(r) Bradley patent No. 934,274, dated September 14, 1909.

(s) Schmidt, et al., patent No. 1,010,809, dated December 5, 1911.

Defendant's Exhibits—Continued

(t) Proctor, et al., patent No. 432,282, dated July 15, 1890.

(u) Proctor Re-issue patent No. 11,460, dated December 25, 1894.

(v) Schwartz patent No. 535,175, dated March 5, 1895.

(w) Proctor patent No. 553,723, dated January 28, 1896.

(x) Winkler patent No. 286,756, dated October 16, 1883.

(y) Van Der Heyden patent No. 504,544, dated September 5, 1893.

[fol. 1618] (z) Schulze patent No. 101,168, dated March 22, 1870.

4. Defendant's Exhibit No. 12, magazine article entitled "Mammoth Incubator with Fans for Circulation of Air" by George F. Paul.

5. Defendant's Exhibit No. 16, circular of the Smith Standard Company.

6. Defendant's Exhibits Nos. 18-a, 18-b, and 18-c, drawings showing internal construction of James machine.

7. Defendant's Exhibit No. 19, chart showing constructions held as non-infringing machines.

8. Defendant's Exhibit No. 20, April, 1918, issue of "Reliable Poultry Journal".

9. Defendant's Exhibit No. 21, drawings of the Hastings incubator installed at Brooklyn, New York.

10. Defendant's Exhibit No. 22, Fig. 1 of drawings of Hastings-Muskogee 1911-1912 machine.

11. Defendant's Exhibit No. 22-a, Figs. 2, 3, 4 and 5 of drawings of Hastings-Muskogee 1911-1912 machine.

12. Defendant's Exhibits Nos. 22-b, 22-c, 22-d, 22-3 and 22-f, photographs showing views of Sirroco blower used in Hastings-Muskogee 1911-1912 machine.

13. Defendant's Exhibit No. 23, article in February, 1912, issue of "Poultry Culture".

14. Defendant's Exhibit No. 24, photostatic copy of index cover page and pages 630 and 631 of November, 1912, issue of "Popular Mechanics" magazine.

[fol. 1619] 15. Defendant's Exhibit No. 25, blue-print copy of July 6, 1912, issue of "Electrical World".

16. Defendant's Exhibit No. 26-a, typewritten article appearing on page 1 of the Hickox Album, introduced as Defendant's Exhibit No. 26.

Defendant's Exhibits—Continued

17. Defendant's Exhibit No. 26-b, photostatic copies of photographs appearing on page 82 of the Hickox Album, introduced as Defendant's Exhibit No. 26.

18. Defendant's Exhibit No. 26-*e*, photostatic copies of photographs appearing on page 84 of the Hickox Album, introduced as Defendant's Exhibit No. 26.

19. Defendant's Exhibit No. 26-d, photostatic copies of photographs appearing on page 86 of the Hickox Album, introduced as Defendant's Exhibit No. 26.

20. Defendant's Exhibit No. 26-e, photostatic copies of newspaper clippings, appearing on page 87 of the Hickox Album, introduced as Defendant's Exhibit No. 26.

21. Defendant's Exhibit No. 26-f, photostatic copy of photograph appearing on page 88 of the Hickox Album, introduced as Defendant's Exhibit No. 26.

22. Defendant's Exhibit No. 26-g, photostatic copy of photograph appearing on page 90 of the Hickox Album, introduced as Defendant's Exhibit No. 26.

23. Defendant's Exhibit No. 33, vertical longitudinal sectional drawing of James machine.

24. Defendant's Exhibit No. 34, vertical cross-sectional drawing of James machine.

[fol. 1620] 25. Defendant's Exhibit No. 37, circular of the Plaintiff on subject of separate hatchers and incubators.

26. Defendant's Exhibit No. 38, second circular of Plaintiff on subject of separate hatchers.

27. Defendant's Exhibit No. 39, Smith's circular letter to trade under date of October, 1930, on spread of disease.

28. Defendant's Exhibit No. 42, pages 12 and 13 of the January, 1932, issue, Vol. 7, No. 1, of the Smith House Organ "Smith Chickograms".

29. Defendant's Exhibit No. 43, copy of contract between Samuel B. Smith and the Buckeye Incubator Company on separate hatchers.

30. Defendant's Exhibit No. 49, being Defendant's patents; Fullington—1,205,445, Nix—1,548,478, Markey—1,751,093 Markey—1,796,872, Markey—1,837,458, Markey—1,939,908, omitting the Fullington patent No. 1,205,445, with notation that the same is incorporated with patents under Defendant's Exhibit No. 10.

31. Defendant's Exhibit No. 51, being tabulation by Dr. Greene from chart introduced as Plaintiff's Exhibit No. 3.

Defendant's Exhibits—Continued

32. Defendant's Exhibit No. 54, photograph of exterior of Smith machine and James incubator.

33. Defendant's Exhibit No. 55-a, photograph of Smith machine showing ceiling with three fans in normal position and fourth fan swung down.

[fol. 1621] 34. Defendant's Exhibit No. 55-b, photograph of Smith machine exterior with door open.

35. Defendant's Exhibit No. 55-c, photograph of Smith machine showing corridor with man standing inside.

36. Defendant's Exhibit No. 55-d, photograph of Smith machine exterior with door open.

37. Defendant's Exhibit No. 56-a, photograph of Smith machine with test holes in side and top candle blowing out.

38. Defendant's Exhibit No. 56-b, photograph of Smith machine with test holes in side and middle candle blowing out.

39. Defendant's Exhibit No. 56-c, photograph of Smith machine with test holes in side and bottom candle blowing out.

40. Defendant's Exhibit No. 57-a, photograph of James machine with test holes in side and top candle being sucked in.

41. Defendant's Exhibit No. 57-b, photograph of James machine with test holes in side and middle candle being sucked in.

42. Defendant's Exhibit No. 57-c, photograph of James machine with test holes in side and bottom candle being sucked in.

43. Defendant's Exhibit No. 58, photographs of prior art machines, Proctor patent No. 563,723, Schwartz patent No. 535,175, Goldstein patent No. 1,137,752, Stulik (German) patent No. 155,917.

44. Defendant's Exhibit No. 59, photographs of prior art patent machines and publications.

45. Defendant's Exhibit No. 66, pages 631, 632, 633, 634 and 641 of the February, 1926, issue of the journal of the [fol. 1622] American Vet-inary Association.

46. Defendant's Exhibit No. 67, summary page 23 and pages 46, 47 and 48 of the "Kansas State Agricultural College Bulletin" of November, 1926.

47. Defendant's Exhibit No. 70, page 232 of the book entitled "Development of the Chick" by Frank Lilly.

Defendant's Exhibits—Continued

48. Defendant's Exhibit No. 73, shodron report with turbulator running and not running.

49. Defendant's Exhibit No. 74-a, 74-b, 74-c and 74-d, Willett detail and diagrams of Smith new and old-style fans.

50. Defendant's Exhibit No. 75, comparative figures between Plaintiff's Exhibits 11-a, 11-b and 11-c and Smith machine produced by Dr. Greene.

51. Defendant's Exhibit No. 101, Zimmer patent No. 1,075,747.

The clerk will also please transmit to the Circuit Court of Appeals for the Second Circuit, as soon as practicable, the following exhibits introduced as evidence in the within cause as physical exhibits, not to be incorporated in the printed transcript of record.

Plaintiff's Physical Exhibits

1. Plaintiff's Exhibit No. 2, book of decisions on Smith patent.

2. Plaintiff's Exhibit No. 4-a, chart showing heat developed while incubating eggs.

[fol. 1623] 3. Plaintiff's Exhibit No. 4-b, photograph of apparatus used by witness Taggart in making heat demonstration.

4. Plaintiff's Exhibit No. 5, "Farmers Bulletin" #585.

5. Plaintiff's Exhibit No. 6, advertisement of Buckeye Incubator Company showing electro-type machine.

6. Plaintiff's Exhibit No. 7, advertisement of Blue Hen Incubator Company.

7. Plaintiff's Exhibit No. 8, bulletin entitled "Profit in Baby Chicks".

8. Plaintiff's Exhibit No. 9, operating book for Buckeye All-Electric Mammoth Incubator, 1931-1932 edition.

9. Plaintiff's Exhibit No. 10, book containing Defendant's Catalogs and Books of Instructions.

10. Plaintiff's Exhibit No. 11-a, drawing of the Smith incubator showing sectional view across the machine through the fan.

11. Plaintiff's Exhibit No. 11-b, drawing of Smith incubator showing a diagrammatic section along the corridor.

Plaintiff's Physical Exhibits—Continued

12. Plaintiff's Exhibit No. 11-c, drawing of Smith incubator showing a sectional view in plane parallel to corridor and midway between front and rear of trays.

13. Plaintiff's Exhibit No. 12, drawing of Buckeye incubator #48.

14. Plaintiff's Exhibit No. 13, photostatic copies of Buckeye catalog copyrighted in 1917.

15. Plaintiff's Exhibit No. 14, excerpts from testimony of Samuel B. Smith given in the following cases: Waxham vs. [fol. 1624] Samuel B. Smith, Ninth Circuit Court; Buckeye and Samuel B. Smith vs. Hillpot, No. 3697 and Hillpot vs. Buckeye, et al., No. 3698 in Third Circuit Court; Snow vs. Samuel B. Smith, No. 9757 in Eighth Circuit; and Wolf vs. Buckeye and Smith in Sixth Circuit Court.

16. Plaintiff's Exhibits 22-a, 22-b and 22-c, photographs of Jamesway machine with glass substituted on one of the doors for wood partitions.

17. Plaintiff's Exhibit No. 16, photographs of how anemometers were placed in tests made by witness Taggart.

18. Plaintiff's Exhibit No. 24, ten sheets or charts showing findings by witness Taggart on Jamesway machine in normal operation.

19. Plaintiff's Exhibit No. 25, series of tabulations of Jamesway machine with fan and air mixer not running compiled by witness Taggart.

20. Plaintiff's Exhibit No. 26, series of tabulations of Jamesway machine with air mixer running and fan not running compiled by witness Taggart.

21. Plaintiff's Exhibit No. 27, egg arrangement chart by witness Taggart.

22. Plaintiff's Exhibit No. 28, chart compiled by witness Taggart showing steps in process of hatching eggs.

23. Plaintiff's Exhibit No. 29, stipulation of numbers and value of machines sold by Smith Incubator Company and Buckeye Incubator Company compiled by Dorenkott.

[fol. 1625] 24. Plaintiff's Exhibit No. 30, bulletin entitled "Transmission of Pullorum Disease" by Agricultural Department.

25. Plaintiff's Exhibit No. 31, bulletin entitled "Sanitation in Hatcheries".

Plaintiff's Physical Exhibits—Continued

26. Plaintiff's Exhibit No. 100, certified copies of testimony of L. A. Cory, S. J. Anderson, R. Shanafelt, John G. Lieber, Huston A. Hogan and L. W. Pitts.

27. Plaintiff's Exhibit No. 101, photostatic copies of newspaper clippings.

Defendant's Exhibits

1. Defendant's Exhibits 1-7, inclusive, affidavits on Preliminary Injunction motion.

2. Defendant's Exhibit No. 13, book entitled "The Dollar Hen."

3. Defendant's Exhibit No. 14, book entitled "The New Egg Farm".

4. Defendant's Exhibit No. 15, catalogs of Smith Standard Company.

5. Defendant's Exhibit No. 17, Smith incubator Company large catalog.

6. Defendant's Exhibit No. 26, the Hickox Album.

7. Defendant's Exhibit No. 27, book by the Reamur, published 1750.

8. Defendant's Exhibit No. 28, catalog of Ira M. Petersime and Son.

9. Defendant's Exhibit No. 29, sketch of Hillpot machine drawn by witness Taggart.

10. Defendant's Exhibit No. 30, certified copy of record and briefs in case of Buckeye and Smith vs. Petersime.

[fol. 1626] 11. Defendant's Exhibit No. 31, record in case of Boliny vs. Smith in Sixth Circuit Court of Appeals.

12. Defendant's Exhibit No. 32, record in case of Smith, et al. vs. Blum in Sixth Circuit Court of Appeals.

13. Defendant's Exhibit No. 35, books, catalogs produced on Plaintiff's demand.

14. Defendant's Exhibit No. 36, Plaintiff's statement as to separate hatchers.

15. Defendant's Exhibit No. 40, Smith Company's Service bulletins numbers 1-100.

16. Defendant's Exhibit No. 41, Smith Incubator Company's catalog, F-40-47.

17. Defendant's Exhibit No. 44, Buckeye Incubator Company's letter of June 30, 1931, with attached illustrations of Buckeye separate hatchers.

Defendant's Exhibits—Continued

18. Defendant's Exhibit No. 45, Buckeye Incubator Company's catalog, copyrighted 1932, illustrating both incubators and separate hatchers.

19. Defendant's Exhibit No. 46, file wraper of Goldstein patent No. 1,137,752.

20. Defendant's Exhibit No. 48, prior art patents in case of Jones v. Cyphers.

21. Defendant's Exhibit No. 52, tabulation of comparisons between the Smith patent and James machine.

22. Defendant's Exhibit No. 68, note-book of Prof. Halpin.

23. Defendant's Exhibit No. 69, photostatic copy of title page and pages 178 and 179 of Dr. King's book, "Farmers of Forty Centuries".

24. Defendant's Exhibit No. 71, treatise on comparative embriology.

[fol. 1627] 25. Defendant's Exhibit No. 72 , Hatchery Code and Supplement.

26. Defendant's Exhibit No. 76, Smith testimony in case Smith, et al. vs. Cooley in Third Circuit Court of Appeals.

27. Defendant's Exhibit No. 80, affidavits of witness Taggart on motion for Preliminary Injunction.

Respectfully submittted, Toulmin & Toulmin, Attorneys for Defendants-Appellants.

Service of the above Præcipe and copy thereof is hereby acknowledged this 31st day of October, 1935.

—— ——, Attorney for Plaintiff-Appellee.

The plaintiff and appellee filed a counter-præcipe including all of the items called for in the præcipe of the defendants and appellants and also the following items and exhibits which are accordingly reproduced in this printed transcript of the record:

Plaintiff's Exhibit No. 4-a, chart showing heat developed while incubating eggs.

Plaintiff's Exhibit No. 6, advertisement of Buckeye Incubator Company showing electric-type machine.

Plaintiff's Exhibit No. 7, advertisement of Blue Hen Incubator Company.

Plaintiff's Exhibit No. 11-a, drawing of the Smith incubator showing sectional view across the machine through the fan.

Defendant's Exhibits—Continued

Plaintiff's Exhibit No. 11-b, drawing of Smith incubator showing a diagrammatic section along the corridor.

[fol. 1628] Plaintiff's Exhibit No. 11-c, drawing of Smith incubator showing a sectional view in plane parallel to corridor and midway between front and rear of trays.

Plaintiff's Exhibit No. 12, drawing of Buckeye incubator #48.

Plaintiff's Exhibit No. 24, ten sheets or charts showing findings by witness Taggart on Jamesway machine in normal operation.

Plaintiff's Exhibit No. 25, series of tabulations of Jamesway machine with fan running air mixer not running compiled by witness Taggart.

Plaintiff's Exhibit No. 26, series of tabulations of Jamesway machine with air mixer running and fan not running compiled by witness Taggart.

Plaintiff's Exhibit No. 27, egg arrangement chart by witness Taggart.

Plaintiff's Exhibit No. 28, chart compiled by witness Taggart showing steps in process of hatching eggs.

Plaintiff's Exhibit No. 29, stipulation of number and value of machines sold by Smith Incubator Company and Buckeye Incubator Company compiled by Dorenhatt.

Plaintiff's Exhibit I, being Exhibits D-D; D-H; and D-J of Cooley record (the remainder of said Exhibit I may be treated as a physical exhibit, except the copy of the abandoned Hastings application which is called for in defendants' and appellants' præcipe).

Plaintiff's Exhibit No. 100, certified copies of testimony of L. A. Corey, S. J. Anderson, R. Shanafelt, John G. Leiber, Huston A. Hogan and L. W. Pitts.

[fol. 1629] UNITED STATES DISTRICT COURT

[Title omitted]

STIPULATION

It is hereby stipulated and agreed, that the foregoing (in 3 vols.) is a true transcript of the record of the said Dis-

trict Court in the above entitled matter as agreed on by the parties.

Dated December —, 1935.

A. L. Ely, Attorney for Plaintiff. Toulmin & Toulmin, Attorneys for Defendants.

[fol. 1630] Clerk's certificate to foregoing transcript omitted in printing.

[fol. 1631] UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SECOND CIRCUIT

SAMUEL B. SMITH, Plaintiff-Appellee,

against

JAMES MANUFACTURING COMPANY and ELMIRA HATCHERIES, INC., Defendants-Appellants

OPINION

Before Manton, Swan and Chase, Circuit Judges

Appeal from the United States District Court for the Western District of New York. Suit for infringement of patent. Decree for plaintiff; defendants appeal. Reversed.

Albert L. Ely, Esq., Max D. Farmer, Esq., Attorneys for Appellee. Parker, Prochnow & Farmer, Esqs., of counsel.

J. S. Powers, Esq., H. A. Toulmin, Jr., Esq., H. A. Toulmin, Sr., Esq., Counsel for Appellants.

MANTON, Circuit Judge:

This suit is for infringement of Claims 1, 2, 3 and 5 of the Smith patent No. 1,262,860, for an incubator granted April 16, 1918, on an application filed October 26, 1916. Claim 1 has been held invalid in Smith v. Hall, decided this day. Claims 2 and 3 are similar method claims and fall for the same reasons as Claim 1. With the method claims invalid, there is nothing in claim 5 covering the apparatus [fol. 1632] to apply the method to support an infringement suit.

Decree reversed.

[fol. 1633] UNITED STATES CIRCUIT COURT OF APPEALS, SECOND CIRCUIT

[Title omitted]

DECREE—April 13, 1936

Appeal from the District Court of the United States for the Western District of New York

This cause came on to be heard on the transcript of record from the District Court of the United States for the Western District of New York, and was argued by counsel.

On consideration whereof, it is now hereby ordered, adjudged, and decreed that the decree of said District Court be and it hereby is reversed with costs.

It is further ordered that a mandate issue to the said District Court in accordance with this decree.

Wm. Parkin, Clerk.

[fol. 1634] [File endorsement omitted.]

[fol. 1635] Clerk's certificate to foregoing transcript omitted in printing.

[fol. 1636] SUPREME COURT OF THE UNITED STATES

ORDER ALLOWING CERTIORARI—Filed May 25, 1936

The petition herein for a writ of certiorari to the United States Circuit Court of Appeals for the Second Circuit is granted.

And it is further ordered that the duly certified copy of the transcript of the proceedings below which accompanied the petition shall be treated as though filed in response to such writ.

[fol. 1297] In Supreme Court of the United States, October Term, 1936

No. 36

Samuel B. Smith, Petitioner,

vs.

James Manufacturing Company and Elmira Hatcheries, Inc., Respondents

Stipulation for Correction of Record—Filed September 28, 1936

It appearing that there are certain errors in the Record in the above entitled case which counsel desire to have corrected, it is hereby stipulated and agreed that the Clerk may correct the Record in the following particulars:

1. On page 574, in the quotation from the "Boston Sunday Globe", the phrase "At Port O'Connor with more eggs and more funds at his command" should be corrected to read—At Port O'Connor with more experience and more funds at his command—

2. Page 15 of Exhibit 23, being a part of the reproduction of a publication from "Poultry Culture", has been omitted. The Clerk is requested to reproduce this page and insert it at the proper point in the Record. A photostatic copy of the missing page is attached hereto.

A. L. Ely, Attorney for Petitioner.

Cleveland, Ohio, Sept. 23, 1936.

Toulmin & Toulmin, Attorneys for Respondents.

Dayton, Ohio, Sept. 24th, 1936.

...ber suggestion. Cold weather has no perceptible effect upon the temperature. The third batch was made during the present blizzard.

Although temperature and humidity controls were convincing to the investor, the Muskogee public waited dubiously for Mr. Hastings' first batch and it was not until 104 lively youngsters broke forth from 100 fertile eggs, (200 placed in machine) that local faith in the big incubator became general. Our last report finds 180 of these chicks 3 weeks old and without an ailing one in the flock. The week or deductive numbers having been killed during the first three days and now shows growth in a water pail.

Judged by present indications, the writer believes that the Hastings Hatchery is destined to mark the most significant step in the development of the poultry industry since the invention of the lamp heated incubator.

This prediction is based upon three facts. First, the immense economies in the cost of hatching. Second, the better facilities for applying the known principles of incubation. Third, the indisputable and opportunities offered for the further investigation of the science.

Mr. Hastings contends that our progress thus far has been woefully handicapped by too close a worship of nature as a perfect guide. "Not only," he tells us, "have we looked to the setting hen for all our tips on incubation, but we have assumed that our ultimate goal was to equal her work. The hen's natural

A Single Comb Rhode Island Red of unusual color and shape.

end the breeder have no such respect for Nature but rather considers it their particular business to improve upon Nature and patch up her defects. The true solution studies Nature, but he only imitates her when he cannot improve her. The hen has certain facilities and habits that help her hatch eggs and certain limitations that prevent her from hatching them better. We want to begin where she leaves off and we have an right to say we have a science of incubation when we can get more chicks and better ones from a given lot of eggs than any group of setting hens in existence. Until that time we are but thumbed imitators."

The Hastings Hatchery offers the first real opportunity for full control of the various factors of incubation which make possible a complete study of the principles involved. Not the least of its practical advantages for experimental work is the fact that the hatchery is manned and can be regulated for temperature and humidity so that the attendant works with the chick or egg without subjecting it to abnormal conditions. Certainly with such equipment, opportunity exists for some first class poultry research work.

If the Muskogee plant continues to do good work during the present season, Poultry Culture will advocate a Hastings Hatchery as a feature of the Kansas Agricultural college's new poultry department for 1913. Certainly no more fitting institution could be found to take up this work, for Mike Hastings conceived the first rough idea of his present achievement while poultryman at the Station seven years ago.

Teacher—Johnny, what is an octogenarian?

Johnny—Pa says that it's one that can eat eggs three times a day at the price they are.

"THE CORNING EGG FARM BOOK
By Corning Himself"

Not a Dream of Some Would-be Successful Poultryman;

No Theoretical Possibilities;

But Actual, Accomplished Facts.

The Straight-Forward Story of the Building up, in Five and a Half Years, of the Greatest Egg Farm in the World, from a Start with only 50 hens.

The Corning Method developed the Strain of Single Comb White Leghorns, which cannot be surpassed.

The Corning Egg Farm Book tells in detail everything about this Farm, from the purchase of the acreage, at Bound Brook, N. J., in 1906, right up to date.

FEEDING FOR EGGS

The marvelous discoveries, and far-reaching developments in feeding for eggs, which have been made on the Corning Egg Farm during the last two years, can be found only in The Corning Egg Farm Book, because no one has gone into feeding for eggs as thoroughly and as successfully as Corning.

It matters not, how successful you may be, the possession of the knowledge you will obtain by studying The Corning Egg Farm Book will enable you to reap a greater profit, year after year, than ever before.

The Corning Method brings success to the man who keeps a few hens, in the back yard, just as surely as to the man who keeps hens by the hundreds and thousands.

The Corning Egg Farm Has Now Surpassed $6.41 Per Hen Per Year

and The Corning Egg Farm Book by Corning Himself, tells how you can do the same. How to build the Corning Houses, detailed drawings, lists of required materials, with full instructions, are in the Book.

Remember, Corning designed and built all these houses. No builder, architect, or contractor could give you such plans, as only Corning knows.

The chapter covering the handling of birds on Colony Range will help many a man to put more profits into his laying hens than he has ever done before.

Mortality in raising chicks can be materially lessened by following the instructions laid down in the Corning Egg Farm Book.

This Book is a real book, not a cheap, paper pamphlet. It is bound in rich, blue cloth, stamped in gold, with the Corning Strain Utility Cockerel in colors. 216 pages of clear type on fine paper. A Corning Cockerel, painted by one of New York's foremost artists, in life colors, is the frontispiece. The pictures, 36 in number, were taken by a photographer of reputation. They are half-tones, full page, and large. 20 pen-and-ink drawings cover plans of buildings, etc.

The Strain That Makes The Corning Egg Farm Famous.

No one else can offer you the equivalent of The Corning Egg Farm Book at any price, for the particular reason that the knowledge given in plain language, understandable and usable by anyone, has been thought out, worked out, and perfected by the Cornings, the experiments are left for others. The Secrets of the Corning Method, as told in this Book, means success and profits. Price, $1, postpaid, to any address.

THE CORNING EGG FARM . . . BOUND BROOK, N. J.

SINGLE AND R. C. RHODE ISLAND REDS
GREAT WIN AT PHILADELPHIA, PA., DEC. 12-16, 1911.

In Rose Combs: 1, 2 cks.; 1, 2 cbl.; 1 pen; 2, 4 pul.; 4 hens. Specials for best 4 birds, pair cocks, best colored male and female, best shaped male. In single Combs: 2d hen and 2nd ck. At Augusta, Ga., after a long, hard trip, won on Rose Combs: 1 ck.; 1, 2 hens; 1, 2 pens; 2, 3, 4 ckls.; 3, 4 pul., color and shape specials and five gold specials, and 4 pieces on Single Combs.

Great Wins at Allentown, Pa., Illinois, and other shows.

All these prove the high quality of "S. & B." strains.

100 CHOICE COCKERELS TO SELL

Prices from $5 up. Every one worth more money. We want to please you because we have the quality to do it. Try us. Egg catalog now ready. It tells all about our strain, its winnings, how pens are mated, how to breed, etc.; and it's free if you say where you saw this ad.

Seaman & Bogart **R. R. 71** **Port Washington, N. Y.**

Here is hoping that this year your poultry will take a big stride forward in the right direction. And while we are hoping let's not forget that right actions on our part are powerful stimulants in the right direction towards accomplishing this.

It should be gratifying to poultrymen to note that that unfortunate poultry grain, Kaffir corn, has finally aroused enough interest to have a substitution to honor it for the first time. And it has done it in fine style, the county and state of Butler county, Kansas, had a three-days' celebration in October. Here it was used in decorative and arrange into all sorts of fantastic and pretty designs. Truly old King Corn will have to look more carefully to his laurels or Prince Kaffir, who is the late approval will be crowned and placed on his throne.

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IN THE

Supreme Court of the United States

OCTOBER TERM, 1935.

152033
S. C.

No. [redacted] 35

SAMUEL B. SMITH,
Petitioner,

vs.

A. B. HALL and L. C. HALL, d. b. a.
HALL BROTHERS,
[redacted] 36 *Respondents.*

SAMUEL B. SMITH,
Petitioner,

vs.

JAMES MANUFACTURING COMPANY and ELMIRA HATCHERIES, INCORPORATED,
Respondents.

PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SECOND CIRCUIT AND BRIEF IN SUPPORT THEREOF.

CHARLES NEAVE,
DEAN S. EDMONDS,
A. L. ELY,
Counsel for Petitioner.

ACKERMAN PRESS, Inc., 142 Liberty St., 'Phones Rector 2-5556-7

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Supreme Court of the United States

OCTOBER TERM, 1935.

SAMUEL B. SMITH,

Petitioner,

vs.

A. B. HALL and L. C. HALL, d. b. a. HALL BROTHERS,

Respondents.

SAMUEL B. SMITH,

Petitioner,

vs.

JAMES MANUFACTURING COMPANY and ELMIRA HATCHERIES, INCORPORATED,

Respondents.

PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SECOND CIRCUIT.

TO THE HONORABLE THE CHIEF JUSTICE AND ASSOCIATE JUSTICES OF THE SUPREME COURT OF THE UNITED STATES:

Your petitioner, Samuel B. Smith, respectfully prays that a writ of certiorari issue to the United States Circuit Court of Appeals for the Second Circuit to review

two decisions and decrees of that Court entered April 13, 1936 (Hall R. p. 403; James R. p. 1631). Transcripts of the records in the cases, including the proceedings in said Circuit Court of Appeals, are furnished herewith in accordance with Rule 38 of this Court.

I. Summary Statement of the Matter Involved.

Parties and Subject-Matter.

These cases are equity suits brought for infringement of United States Letters Patent No. 1,262,860, for improvements in incubators (Hall R. p. 141; James R. p. 965). This is the same patent which was involved in prior cases heard by this Court in which the patent in suit was held valid and infringed (*Smith* v. *Snow*, 294 U. S. 1; *Waxham* v. *Smith*, 294 U. S. 20).

The *Hall* suit was brought by petitioner Smith against the defendants who operate a large commercial hatchery at Wallingford, Connecticut, under the name of Hall Brothers. These defendants employ a large number of incubators which are the same, or substantially the same, as those which were the subject of the litigation before this Court in the case of *Waxham* v. *Smith*.

The *James* suit was brought against the James Manufacturing Company, a Wisconsin corporation, and Elmira Hatcheries, Inc., a New York corporation. The James Company is engaged in the business of manufacturing and selling incubators throughout the United States, and has an office and branch at Elmira, New York. The Elmira Hatcheries, Inc., is a commercial hatchery at Elmira, N. Y., owned and controlled by the James Company, and it employs mammoth incubators which utilize the principles of the Smith invention as set forth and defined by this Court in the previous litigations.

The Decisions Herein Below.

In the *Hall* case, the United States District Court for the District of Connecticut held the Smith patent valid and infringed as to claim 1, the only claim there in issue (R. p. 361). In the *James* case, the United States District Court for the Western District of New York also held the patent valid and infringed as to claims 1, 2, 3 and 5, which were all of the claims in issue (R. p. 1553). Both cases came on to be heard by the Circuit Court of Appeals for the Second Circuit on the same day, and two opinions were filed simultaneously, reversing both District Courts. The principal opinion is that in the *Hall* case; the opinion in the *James* case merely follows and adopts the findings in the *Hall* case.

In its opinions, the Court of Appeals considered only the issue of validity and held the Smith patent invalid as to all of the claims in suit. The decisions against validity were based entirely upon alleged prior invention and prior used by one Milo Hastings.

Prior Decisions of Other Courts.

1. These decisions in the Second Circuit are the first in which the Smith patent has been held invalid. The patent was held valid and was enforced by this Court in the *Snow* and *Waxham* suits. As was noted by this Court in *Smith* v. *Snow*, the patent had been unanimously held valid in a long line of decisions listed in the opinion. Since the rendition of the decisions of this Court in the *Snow* and *Waxham* cases, numerous District Courts have been guided thereby in holding the patent valid, because, although the *Snow* and *Waxham* cases were primarily concerned with the scope of the patent, this Court expressly approved the then unanimous holdings of validity.

2. There is a direct conflict between the Court of Appeals for the Second Circuit on the one hand and the Courts of

Appeals for the Third and Sixth Circuits on the other as to the alleged prior invention and prior use by Hastings.

The Hastings prior use and publications purporting to describe it and a prior abandoned application for patent filed by Hastings were not in the records in the *Snow* and *Waxham* suits, but they have been known in the litigation on the Smith patent from its inception. In the first case upon the patent (*Buckeye Incubator Company, et al.*, v. *Wolf*, 291 F. 253), Judge Westenhaver, sitting in the District Court for the Northern District of Ohio, Western Division, had before him the Hastings abandoned application and numerous publications inspired by Hastings, many of which are duplicated in the Hall record. In summarizing the evidence presented by the abandoned application and the publications, Judge Westenhaver said (p. 260):

> "Neither the Hastings publications, nor his rejected patent • • • measure up to these exacting requirements" (to anticipate an issued patent).

The Circuit Court of Appeals for the Sixth Circuit affirmed the decision of the District Court (296 F. 680), but without making any specific reference to the Hastings evidence, adopting (p. 681) "the reasons so fully stated by the District Court upon which are based its finding and decree that the claims of these patents are valid • • •".

In the second litigation upon the Smith patent, in the District of New Jersey (*Buckeye Incubator Company, et al.*, v. *Cooley*) the Hastings publications and the abandoned application were introduced, and in addition, Hastings himself testified before the Court. The opinion of the District Court (Judge Bodine) was not published, but it is contained in Plaintiff's Exhibit 2 in the *James* case and is reproduced at the end of the brief herein. Judge Bodine held:

"The reasoning of the Hastings prior use is not persuasive against the patent. Smith never lost sight of results. Hastings never seems to have procured results."

The District Court was affirmed by the Circuit Court of Appeals for the Third Circuit (17 F. [2] 453), the discussion of this defense appearing at the bottom of page 454.

3. There is direct conflict between the decisions of the Court of Appeals for the Second Circuit in the instant cases and the decisions of Courts other than the Courts of Appeals for the Third and Sixth Circuits.

In the third suit upon the patent, *Buckeye Incubator Company, et al.*, v. *Stone*, in the District Court of Oregon, the Hastings prior use was again urged. This suit was tried upon reference to a Master whose opinion is appended to the accompanying brief. There was no appeal in that case.

Since the decision of this Court in the *Snow* and *Waxham* cases, other suits have been tried in which the Hastings testimony has played a prominent part. In the case of *Smith* v. *Sims*, the identical testimony and exhibits in the *James* case were before Judge Baltzell in the District Court for the Southern District of Indiana. He held the patent valid and infringed (Hall R. p. 260). No appeal was taken.

Again, Hastings and the Hastings publications appeared in the case of *Smith* v. *Street* in the District Court for the District of Minnesota, before Judge Molyneaux, and he held that Hastings did not anticipate Smith (Hall R. p. 283). This was not appealed from.

Accountings are now in progress in the *Sims* and *Street* suits.

Finally, Hastings and the Hastings publications appeared in a suit brought in Canada to invalidate the corresponding Canadian Smith patent and the Exchequer Court in that country held the patent valid thereover. The opinion

of the Exchequer Court is of great length; excerpts from it dealing with the Hastings defense appear in an appendix to the accompanying brief.

The evidence in support of this Hastings defense was substantially the same in all of these cases in which that defense was urged. In some instances there were more of the Hastings publications than in others, and in some instances there was the testimony of Hastings and some of his associates while in others there was not. Notwithstanding these differences, the evidence was substantially the same in all. In those cases in which additional publications and testimony were submitted, it is debatable whether the defense was strengthened or weakened by the additional matter.

Specifically, in the *Sims* case referred to above, the testimony in support of the Hastings defense was identical with that in the suit at bar against James, the same testimony having been taken and entitled in both cases. Also, the abandoned application of Hastings and the complete file thereof including the brief of counsel referred to in the opinion of the Court of Appeals of the Second Circuit in the *Hall* case, have been before the Courts in all of the litigations referred to above. Also, Hastings has appeared and testified before the Court in all of the cases above referred to excepting only the *Wolf* and *Stone* cases.

4. In a number of suits pending under the Smith patent against users of incubators identical with those used by Hall Brothers, applications have been filed requesting that trial and decision be suspended pending decisions in the *Hall* and *James* suits. In the majority of such cases, this application has been denied, but in some the District Courts have suspended proceedings pending these decisions. The only ways in which such cases can proceed is by review by this Court of the decisions here referred to, or in each Circuit the same testimony which was held by the Second Circuit to invalidate must be reviewed by the District

Courts and then by the Court of Appeals, thus greatly protracting the litigation, whereas the grant of the petition and subsequent decision on the merits will lead to prompt settlement of the issue for all Circuits and bring the practice into harmony over the entire country.

Summary of Prior Litigation.

The litigation on the Smith patent has been greatly protracted by divergent opinions of the lower Courts, first as to the scope of the patent, and now, after the expiration of the patent, its validity. In all suits excepting only the present ones, the validity of the patent has been sustained. The present decisions against its validity were rendered by three Circuit Court Judges, after two District Court Judges who considered the same evidence had held it insufficient to warrant invalidation. Also, in other suits, the same or equivalent evidence presenting the same defense was considered and held insufficient by four District Court Judges, six Circuit Court Judges, a Master, and the Judge of the Exchequer Court of Canada. This irreconcilable conflict of judicial opinion makes it most desirable and expedient that this Court render its authoritative decision on the issue of validity of the Smith patent in view of the alleged prior use upon which the decisions of the Circuit Court of Appeals were based.

WHEREFORE, your petitioner respectfully prays that a writ of certiorari be issued out of and under the seal of this Court, directed to the Circuit Court of Appeals for the Second Circuit, commanding that Court to certify and send to this Court on a day certain to be therein designated, full and complete transcripts of the records and all proceedings in said Circuit Court of Appeals in these cases, to the end that said causes may be reviewed and determined by this Court as provided by law, and that your pe-

titioner may have such other and further relief or remedy in the premises as to this Court may seem appropriate, and that said judgments of said Circuit Court of Appeals may be reversed by this Honorable Court.

SAMUEL B. SMITH,
Petitioner,
By CHARLES NEAVE,
DEAN S. EDMONDS,
A. L. ELY.

Dated, April 16, 1936.

State of New York }
County of New York, } ss.:

Dean S. Edmonds, being first duly sworn, says that he is of counsel for Samuel B. Smith, petitioner; that he assisted in the preparation of the foregoing petition, and that the allegations therein contained are true, as he verily believes.

DEAN S. EDMONDS.

Sworn and subscribed to before me
this 20 day of April, 1936.

ELSIE SEARING,
Notary Public,
(Seal) Queens County.
Queens County Clerk's No. 2327.
Queens County Register's No. 1131.
Certificate filed in New York County.
New York Co. Clerk's No. 436.
New York Co. Register's No. 8S.259.
Commission expires March 30, 1938.

BRIEF IN SUPPORT OF PETITION FOR WRIT OF CERTIORARI.

Opinions Below.

The opinion of the District Court in the *Hall* case is found at page 361 of the Hall Record; the opinion of the Circuit Court of Appeals for the Second Circuit at page 403 of that Record.

The opinion of the District Court in the *James* case is found at page 1553 of the James Record; the opinion of the Circuit Court of Appeals at page 1631 of that Record.

Jurisdiction.

The grounds of jurisdiction are:

A. The date of the opinion of the Circuit Court of Appeals to be reviewed is April 6, 1936, in both cases, and the date of the order entered in the Court of Appeals in both cases is April 13, 1936 (Hall R. p. 410; James R. p. 1632).

B. The judgments were rendered in suits in equity brought under the proper statutes to determine validity and infringement of Letter-Patent No. 1,262,860.

C. The statute under which jurisdiction is invoked is United States Code, Title 28, Section 347.

D. Cases believed to sustain the jurisdiction are:

Powers-Kennedy Contracting Corp. v. *Concrete Mixing & Conveying Co.*, 282 U. S. 175, 177;
Saranac Automatic Machine Corp. v. *Wirebounds Patents Co.*, 282 U. S. 704, 705;
Smith v. *Magic City Kennel Club*, 282 U. S. 784, 785.

Concise Statement of the Facts.

The facts are concisely and sufficiently stated in the petition.

Specification of Errors.

The errors intended to be urged are:

(1) The Court of Appeals of the Second Circuit erred in holding that the Hastings defense was effective to render the Smith patent invalid as to claim 1 (in both cases) and as to claims 2, 3 and 5 in the *James* case.

(2) The Court of Appeals of the Second Circuit erred in ordering reversal of the decrees of the District Courts.

Argument.

I. In the *Snow* and *Waxham* suits, this Court was concerned primarily with the scope of claim 1 of the Smith patent, the Court noting that the validity of the patent had been sustained in all of the numerous cases in which the patent had been considered. But this Court gave its own independent judgment on the validity of the Smith patent when it said (294 U. S. 17):

> "This history of the prior art serves to emphasize rather than to discredit the striking advance made by Smith in effecting the combination defined in claim 1. More than the skill of the art was involved in combining and adjusting its elements in such fashion as to solve the major problems of artificial incubation."

The records in the *Snow* and *Waxham* suits did not include any of the Hastings publications or testimony about

what was done by Hastings, so this Court did not pass on the specific matters of defense which were upheld by the Court of Appeals of the Second Circuit.

II. **The decisions of the Court of Appeals of the Second Circuit are in irreconcilable conflict with decisions of the Courts of Appeals of the Third and Sixth Circuits.** The conflict in these instances is not only on the general issue of validity of the Smith patent but also on the specific issue of validity over the Hastings defense. The rulings of the Courts of Appeals of the Third and Sixth Circuits to which reference is made are in suits for infringement of the Smith patent entitled *Buckeye Incubator Company, et al.*, v. *Wolf* and *Buckeye Incubator Company, et al.*, v. *Cooley*.

The *Wolf* suit was tried in the District Court for the Northern District of Ohio, Western Division, before Judge Westenhaver, and the latter filed an opinion sustaining the validity of the Smith patent over the Hastings defense (291 F. 253). On appeal this ruling was affirmed by the Court of Appeals of the Sixth Circuit (296 F. 680).

The record before the District Court and the Court of Appeals in this *Wolf* case included publications (which are among those in the present cases) prior in date to the Smith patent and descriptive of what was done by Hastings, and a copy of an application (also in the present cases) for Letters Patent which was filed by Hastings prior to the Smith invention and which became abandoned.

The *Cooley* case was tried in the District Court for the District of New Jersey before Judge Bodine and resulted in a decree sustaining the validity of the Smith patent over the Hastings defense among others. The opinion of Judge Bodine was not reported but a copy is included in an appendix hereto. This decision of the District Court was affirmed by the Court of Appeals of the Third Circuit (17 F. [2d] 458).

The record in this *Cooley* case included the publications and application referred to above as in the *Wolf* case, and in addition Hastings himself appeared before the Court and testified, together with a corroborating witness, Davis, at whose farm on Long Island Hastings endeavored to build an operative incubator, and another corroborating witness, Chambless, who also testified about this Davis installation.

The evidence dealing with the Hastings defense was in substance the same in these *Wolf* and *Cooley* cases as in the suits at bar against *Hall* and *James*. Some additional publications were in evidence in the *James* case and also some additional photographs. These, however, were so much the same in substance as other publications and photographs which were in the records of the *Wolf* and *Cooley* cases as to make them cumulative and of no significance otherwise. Also, the record in the *James* case, includes the testimony of witnesses who did not appear in the *Wolf* and *Cooley* cases. They, however, merely added further facts about a Hastings installation at Muskogee, Oklahoma, additional to and corroborative of the facts recited by Hastings himself in the *Cooley* case as well as in the *Hall* and *James* cases. It is for these reasons that the records in these several suits against *Wolf, Cooley, Hall* and *James* are stated to be the same in substance so far as concerns the Hastings defense. Indeed it might well be urged, and we think it is a fact, that the evidence before the Court in the *Hall* and *James* cases at bar additional to that which was in the *Wolf* and *Cooley* cases serves to disclose deficiencies in the defense which otherwise would not be disclosed so clearly, and in that respect the Hastings defense appears in a light less favorable to the defendants in the cases at bar than in the prior suits against *Wolf* and *Cooley*.

The opinion of the Court of Appeals of the Second Circuit in the *Hall* case might lead one to suppose that a brief

filed in the Patent Office in aid of Hastings' application for patent, referred to and quoted in the Court's opinion, was not in the records of the prior suits against *Wolf* and *Cooley*. To guard against misapprehension, we note that that is not the fact. The entire record of the prosecution of the Hastings abandoned application, including the brief referred to, was in the record of both the *Wolf* and *Cooley* cases.

III. **The decisions of the Court of Appeals of the Second Circuit are in irreconcilable conflict with decisions of Courts other than the Courts of Appeals of the Third and Sixth Circuits in the Wolf and Cooley cases referred to in the foregoing.**

A suit entitled *Buckeye Incubator Company* v. *Stone* was filed in the District Court for the District of Oregon for infringement of the Smith patent. The suit was referred to a Master, evidence was introduced before the Master including proofs of the Hastings defense, and the Master filed a report sustaining the validity of the Smith patent. A copy of the Master's report is included in the appendix hereto.

This *Stone* case terminated at this point with the result that no opinion of the Court was filed therein.

The evidence in support of the Hastings defense in this *Stone* case related primarily to what Hastings did at Muskogee, Oklahoma; it included depositions of many persons who were familiar with the operation of the Muskogee incubator, some of whom testified in the *James* case. Much of the Hastings testimony in the records before the Court of Appeals in the cases at bar was testimony taken in this *Stone* suit and brought into the *James* suit by stipulation.

Another suit entitled *Smith* v. *Sims* was filed in the District Court for the Southern District of Indiana, and came on for trial before Judge Baltzell. The Hastings defense was presented in this suit along with others. The decision

of the Court sustained the validity of the Smith patent, but the opinion filed includes no specific comment on the Hastings defense (Hall R. p. 261).

The evidence in support of the Hastings defense in this *Sims* suit was identical with that in the *James* case at bar; it was taken and entitled in both cases (see James R. p. 1396).

Another suit entitled *Smith* v. *Street* was filed in the District Court for the District of Minnesota and came on for trial before Judge Molyneaux. The Hastings defense, among others, was presented by defendant. The District Court rendered its decision sustaining the validity of the Smith patent. The portion of its opinion referring to the Hastings defense reads as follows:

> "That no additional evidence has been presented in regard to the alleged Hastings prior use which in any way adds to previous testimony in regard thereto which has been offered in the following cases:
>
> (1) *Buckeye Incubator Co.* v. *Wolf*, 291 Fed. 253, (N. D. Ohio W. D.), affirmed, 296 Fed. 680, (C. C. A. 6th), (2) *Buckeye Incubator Co., et al.*, v. *Cooley* (D. N. J., unreported), affirmed 17 Fed. (2d) 463 (C. C. A. 3d), (3) *Buckeye Incubator Co., et al.*, v. *Stone* (D. Oregon, Maguire, Special Master, unreported), (4) *Smith* v. *Sims, et al.* (S. D. Indiana, J. Baltzell, unreported),
>
> and that said evidence as to said alleged Hastings use fails to establish an anticipation of Claim 1 of the patent-in-suit and shows that the prior attempts of Hastings to solve the problem of mass incubation did not embody the principles of the Smith invention and were failures and abandoned by Hastings and those associated with him, and the so-called Hastings use does not anticipate the invention of Claim 1 of the Smith patent-in-suit" (Hall R. p. 283).

In this *Street* suit, the Minnesota Court had before it all of the evidence relating to the Hastings defense in the *James* case at bar, and, in addition thereto, Hastings gave his testimony before the Court in the *Street* case as he did in the *Hall* case; in the *James* case his testimony was by deposition in advance of trial.

In Canada, a patent has been granted identical with the Smith patent involved in these litigations in the United States. A suit was filed in Canada by the Crown for the invalidation of the Canadian Smith patent and was decided by the Exchequer Court which sustained the validity of the patent. Extracts from the opinion of that Court are included in the appendix hereto. The evidence before the Exchequer Court in the suit included a considerable number of the publications dealing with the Hastings installations, and also a copy of Hastings' abandoned application for patent, together with the testimony of Hastings and of various others who were familiar with his Muskogee operations. The Crown did not urge the Hastings incubator at the Davis farm near Brooklyn as a defense.

In summary, the records in these several suits relating to the Hastings defense were the same in substance as those before the Court of Appeals for the Second Circuit in the suits at bar; differences as to specific items appear from case to case, which may be characterized generally as increases in the quantity of the proof as one case followed another in point of time. In all, however, the substance is the same, as is sufficiently indicated in the foregoing specification of the proofs in the several cases, and, on those proofs, there was entire harmony of decision until the rendition of the decisions of the Court of Appeals of the Second Circuit in the cases at bar. It is impossible to reconcile the two latter decisions with any of those which preceded them.

IV. By way of further specification that the proofs submitted in support of the Hastings defense in the foregoing litigations were in substance the same, the following is submitted:

As is shown by the decision of Judge Westenhaver in the *Wolf* case, at page 257, the District Court and the Court of Appeals in that case had before them the following publications:

Dollar Hen
Poultry Culture
Boston Sunday Globe
Technical World.

The "Dollar Hen" and the "Poultry Culture" and "Technical World" were in the *James* case. The other publication mentioned above was in neither of the cases before the Second Circuit. The record in the *Wolf* case also included a copy of the abandoned Hastings application, including all of the proceedings in the Patent Office, and was therefore identical with the application before the Second Circuit. This statement is made from an examination of the record in the *Wolf* case.

As is shown by the decision of Judge Bodine in the appendix the *Cooley* record contained all of the publications which were in the Wolf case and in addition an article in the "Country Gentleman". This latter publication was in the *James* record (p. 767). In addition the *Cooley* record included drawings made for Hastings, just prior to the trial, at the offices of the patent attorney who handled that case (see James R. p. 1007-1009, incl.) just as the *James'* record contains drawings made before the depositions in the offices of the defendants' attorney. Hastings appeared and testified in person before Judge Bodine, as to the Brooklyn and Muskogee incubators; Davis and one Chambless appeared and testified as to the Brooklyn incubators. Chambless did not testify in the cases at bar. The

complete file of the Hastings application was also in that record just as in the *Wolf* case. This statement is again made from examination of the record itself.

It therefore appears that except for three additional publications ("Reliable Poultry Journal", "Popular Mechanics" and "Electrical World") dealing with the Muskogee prior use, the printed publications were the same in the *Wolf* and *Cooley* cases as in the present records. Of these three publications, "Reliable Poultry Journal" (James R. p. 1396) was published in 1918, after Hastings learned of the success of the Smith invention (James R. p. 819); "Popular Mechanics" (James R. p. 1407) adds nothing to the description of the incubator mentioned in the other publications; The "Electrical World" article (James R. p. 1410), which was referred to by the Court of Appeals of the Second Circuit, is substantially a reprint of the "Popular Mechanics" article and shows the fan which all admitted was a failure, as is shown below. The description of the incubator contained in the articles in the "Electrical World" and "Popular Mechanics" is very meagre and less explicit than the "Poultry Culture" article. The memorandum appearing in the Hickox album (Deft.s' Exh. 26) is "copy" which was gotten up by Hickox to supply the various periodicals with Hastings' publicity (James R. p. 835). It is a typical write-up in the "popular" style intended to "puff" the Hastings hatchery and gives no adequate description of the incubator or its mode of operation. Extracts from it are found in the several publications. Exhibit 26E is a flamboyant newspaper article in the same vein and adding nothing to the disclosures in the "Poultry Culture" or other articles which were in the records in the cases in the Sixth and Third Circuits. As far as the publications are concerned, it is apparent that the defendants in the *Wolf* and *Cooley* cases selected the most pertinent, while in the *James* case the record was loaded with everything, whether or not it added to what was already known.

As for witnesses dealing with the Davis incubator, the only new witness was Mrs. Davis in the *Hall* case, whose testimony was largely hearsay and based solely upon her recollection of payments for eggs to be delivered to the Davis plant (see opinion of Judge Hincks, Hall R. p. 369). In so far as concerns witnesses to the Muskogee operations, the principal witness, Lieber, testified to those operations in the *Stone* case in Oregon. Pitts, Shanafelt, Cory and Ward also testified in that case (see Master's opinion attached). The exceptions are (a) Hickox, who supervised the taking of the photographs which appeared in several newspaper articles (James R. p. 836), and prepared some material for the publications. He was not connected with the enterprise in any way and had no knowledge of the results secured. His interest was merely that of an agent for the electric company (James R. p. 850) and except for his visit to the hatchery for the taking of the pictures, his other calls "were perfunctory visits the same as I made on hundreds of customers" (James R. p. 851); (b) the mechanic, Peabody, who claimed to have installed certain fans but knew nothing about the operation (James R. p. 855); (c) the witness Brewer who testified to receiving some chickens from the Muskogee plant; he relied on recollection alone and had no definite knowledge as to the number of chickens he received (James R. p. 910); and, (d) the witness Campbell who was a lad at the time of the Muskogee operations and gave his testimony from recollection as to certain hatching operations carried on for his parents who were alive and available as witnesses but were not called (R. p. 913).

The photographs which composed the album introduced by Hickox, were, except in unimportant instances, reproduced in the publications which were before the Sixth and Third Circuits. Those which were not reproduced in the publications add nothing of value. The three photographs on pages 1417 and 1418 of the *James* record to which the

Court of Appeals referred as showing the "superimposed egg trays" are in the "Poultry Culture" and "Technical World" publications which were in the *Wolf* and *Cooley* records. The photograph on page 1420 of the *James* record is, except for the individual shown therein, identical with the photograph in "Poultry Culture" (James R. p. 1405). The photograph of the blower fan (Deft.s' Exh. 22-B-F) which was alleged to have been used in the Muskogee hatchery must be disregarded for it was shown that it was not the same fan which Hastings claimed had been installed in that plant. This statement is made because Hastings repeatedly said that the fan used at Muskogee had an 8" outlet (James R. p. 735, 765, 806) whereas the fan of the photograph had a 12" outlet (James R. p. 914, 941).

In addition to the above specification of similarity and dissimilarity between the records here produced and those which have been considered by the Sixth and Third Circuits and by the Master in the *Stone* case, attention is directed to the fact that *the identical record which constitutes the James record here was taken and entitled in the Sims case* which went before Judge Baltzell in the District of Indiana. In addition to this, the records in all the cases dealing with the Hastings use (except the later *Hall* record) were before Judge Molyneaux in the *Street* case in Minnesota as is shown by the extract from his opinion quoted in another portion of his brief. Hastings also testified in person in the *Street* case (Hall R. p. 82).

In so far then as concerns the cases which have been before the Courts in this country and in which the Hastings prior use has been found ineffective, the only evidence in the present cases which was not in one or more of the prior cases, is the testimony of Mrs. Davis, to which reference has been made above, and a catalogue issued by Davis advertising his roadhouse where the incubator was located. This catalogue is Exhibit G in the *Hall* case and is wholly without any evidentiary value on either the existence or con-

struction of the Hastings incubator, for no reference whatever to the incubator is made therein.

Again, as is shown by the opinion of the Exchequer Court of Canada, in the appendix, all of the substantial evidence, including the file wrapper, the publications and the testimony of Hastings, was before that Court and was rejected as a defense.

This summary of the prior evidence which has been considered in cases dealing with the Hastings prior use has necessarily been abbreviated, but the statement is amply supported that there was nothing before the Court of Appeals of the Second Circuit in the *Hall* and *James* cases which added any material items to the evidence which had been considered in the other cases.

There is, therefore, an irreconcilable conflict of decision on the effect to be given to the Hastings defense.

V. The decisions of the Circuit Court of Appeals for the Second Circuit were not only in direct conflict with the decisions of other Courts on essentially the same records, but, also, were wrong.

It is true that Hastings tried to solve the problem of mass incubation throughout several years prior to the Smith invention. Smith was also engaged on that same problem for a long time before his invention was made. The difference is that Hastings failed and Smith succeeded.

Hastings made three different attempts to construct and operate a successful hatchery, at three different places and at three different times, prior to the Smith invention. His first attempt was in Brooklyn, N. Y., in 1911 at the Davis farm. This ended in failure and the incubator he made was destroyed (Hall R. p. 90). He then went to Muskogee, Oklahoma, and with new capital built and endeavored to operate a different incubator in 1912. This was also a failure (James R. p. 883) and was destroyed (James R. p. 886). Then he went to Port O'Connor, Texas, in the fall

of 1912 and built a new form of incubator. This third one never got beyond the experimental stage and was abandoned (James R. p. 812). Nothing more was heard of Hastings until after Smith had perfected his invention. Then Hastings made a fourth unsuccessful attempt in 1917 and 1918 to build and operate an incubator at Tiffin, Ohio (James R. p. 820-821). Referring to that one, he said he

> "tried out a method of hatching very much more like the Smith-Buckeye device than I had used in the past" (James R. p. 820).

Each time Hastings engaged in a new venture, he published glowing articles of what he hoped to accomplish, but each time his results fell short of achievement. As Judge Westenhaver said in *Buckeye* v. *Wolf* (p. 258):

> "Neither in the 'Poultry Culture' article nor in any other is given any definite or specific description whereby one skilled in the art could reproduce the Hastings structure. These articles discuss the functions, principles, and results, and indulge in rose-colored predictions."

On May 3, 1911, after Hastings had built the unsuccessful Davis incubator at Brooklyn and before he went to Muskogee, he filed an application for Letters Patent written by himself. What he wrote in that application may well be taken as indicative of the novel ideas which Hastings then thought he had evolved. The application is reproduced at pages 317 to 354 of the *Hall* record, and pages 1010 to 1047 of the *James* record.

The drawing filed with the application in May, 1911, is in the *James* record at page 1047; the description appears at page 1014. The egg chamber is designated A. It is closed at the top and bottom by layers of fabric EE or by perforated partitions although the latter were never used

(James R. p. 787). The fan is outside. *Staged incubation is not in any way described in the specification as filed, nor is it definitely indicated in any other way contemporaneous with the Davis incubator.*

Just prior to the trial of the *James* case, Hastings had some new drawings (Deft.s' Exh. 21, James R. p. 1400) made in the offices of the attorneys for the defendants (James R. p. 770) and these drawings were said to illustrate the construction of the Davis incubator. The construction illustrated in them differs materially from that of the contemporary Patent Office drawing and they are of questionable probative value for that reason.

In its opinion in the *Hall* case, the Court of Appeals said (R. 405) that there are "original photographs with published illustrations • • • in the record" illustrating the construction of the Davis incubator. The fact is that there are no such photographs or illustrations in the record. There are in Defendants' Exhibit G some pictures taken around the Davis farm, but they do not show the incubator.

In the record of the *Cooley* case, a small photograph was introduced, but Judge Bodine said:

> "The Kodak pictures offered in evidence disclose little".

On the issue of whether or not Hastings employed staged incubation in the Davis installation, the Court of Appeals of the Second Circuit quoted the testimony of Hastings, Davis and Davis' wife given at the trial of the *Hall* case in 1935 to the effect that Hastings set the eggs in staged incubation. As opposed to this, Hastings said in his deposition taken in the *James* case in 1933:

> "I do not remember the details of the time we set these eggs, because it was of no importance to the principle of incubation but merely a matter of convenience

in handling the eggs and taking off chicks" (James R. 779).

If staged incubation had been used in the Davis incubator and Hastings had acquired any appreciation of its value, it is inconceivable that he would not have recalled it later.

As further support for the statement that Hastings practiced staged incubation in the Davis incubator, the Court of Appeals quoted an extract from a book entitled "The Dollar Hen" published by Hastings in 1909. This quotation in its entirety indicates that at the time of writing the book Hastings thought that the principles applicable to cold storage operations might be applied to incubators. Any disclosure of staged incubation is by way of deduction only, but we submit that the vague statement quoted by the Court of Appeals of the Second Circuit and which was made in 1909, is no proof that two years later Hastings set the Brooklyn incubator in staged incubation.

As Judge Westenhaver said in the *Wolf* case, page 257:

> "The earliest article in the 'Dollar Hen' may be disregarded, as Hastings there merely describes a process for maintaining temperature in cold storage and suggests how it may be applied in a hatchery. It does not purport to describe an apparatus or ever to have been put to any use."

Hastings admitted that Judge Westenhaver's analysis of this publication is correct (James R. 767-9). Ten years after the publication, Hastings characterized it as "an impractical poultry book" (James R. 822).

In further support of its statement that Hastings practiced staged incubation with the Davis incubator, the Court of Appeals made reference to a "brief" filed by Hastings' attorneys in connection with Hastings' application for patent. This "brief" is an argument submitted in the effort

to secure the allowance of claims in the Hastings application (James R. p. 1034). It is dated December 20, 1912, nearly two years after Hastings built the small experimental incubator at the Davis farm and several months after his unsuccessful and abandoned effort at Muskogee. Even if this brief, filed a year and a half after the Davis hatchery closed down, contained a disclosure of staged incubation, that would not be proof that staged incubation was used there. As Judge Hincks said in the *Hall* case:

> "That Hastings in 1912 knew of staged incubation is slight evidence, if any, that he practiced it in 1911" (Hall R. p. 370).

It is clear beyond question that the application for patent as filed by Hastings contains no disclosure, and no comment approaching disclosure, of staged incubation. Therefore, no claim for any process or apparatus involving staged incubation could have been allowed in that application, and as a matter of fact no such claim was ever presented.

When this brief, submitted to the Patent Office in December, 1912, is superficially read, it might be supposed, in the light of subsequently-acquired knowledge and experience, that in this document Hastings disclosed the Smith method and displayed some grasp of its essentials. Apparently, the Court of Appeals of the Second Circuit got this erroneous impression, but a careful reading of the document shows that it is wholly lacking in a positive disclosure of one of the major elements of the Smith process, *i. e.*, that the air must be propelled over a mass of eggs, in various stages of incubation and located in one chamber, with sufficient velocity in the air current so that the air throughout the chamber is diffused and maintained at the same temperature. The entire brief fails to disclose this conception. As found on page 1039 of the *James* record, the *maximum* air movement described by Hast-

ings in this brief is only thirty feet a minute, a current which is hardly perceptible.* And even at this late date Hastings still clung to the idea that the equivalent of the fabric covering of his Patent Office drawing must be interposed between the source of the current and the eggs, an expedient which would cause retardation of the flow of air to a considerable degree. Hastings said (James R. p. 1039) that the air is "distributed throughout the cross-section of its movement by suitable gratings".

Again, this disclosure should be read upon the background of what Hastings actually did, and not upon a background of what Smith later developed. The Muskogee incubator which preceded this brief was operated upon the principle of filling each of several chambers with eggs of the same stage of advancement in incubation, shifting the eggs to other chambers and *increasing the temperature of the chambers as the eggs advanced in maturity*. Obviously, this is the system to which Hastings referred in the portions of the brief indicated in the Court of Appeals' opinion, and every word of the brief is consistent with that idea.

It is not true, therefore, that at the time this brief was filed, Hastings had conceived, much less perfected, the process of incubation later perfected by Smith. However near Hastings might have been to the solution of the problem, he did not in fact reach it. He was not the inventor of the subject matter of the Smith invention, nor did he anticipate the claims of the patent.

There are other statements in the Hastings application for patent that are significant. In the argument dated May 24, 1912, Hastings characterized his efforts to build a successful incubator as "a painstaking and very costly series of experiments" (James R. p. 1027). At the date this was

*It appears that fifteen to twenty feet a minute is not detectable and is unsuitable for hatching eggs (James R. p. 171). The average speed of the air through the Smith and James incubators is 135 to 140 feet per minute (James R. p. 672).

written the only experiments which Hastings had performed were at Brooklyn and Muskogee. At page 817 of the *James* record, Hastings said he "had many disappointing hatches" at Muskogee. Also, the decision in the Canadian suit shows that Hastings characterized his experiences at Muskogee as "only fair" and he said "there were many individual cases of very poor results." Lieber said Hastings was "disgusted" with his work (James R. p. 883). Also, the testimony of a number of customers of the hatchery is that most disastrous and disappointing hatches were secured (James R. p. 904; 915, 920; 934; 1053). The Muskogee hatchery was a complete failure in 1913; after trying it out on one batch of eggs, it was closed down and later completely destroyed (James R. p. 883). In the light of these comments and the failure of the effort at Muskogee, it is not reasonable to suppose that the previous experiments at the Davis farm were successful, and any evidence said to establish or to indicate success of that incubator should be subjected to close scrutiny.

The following comment by Judge Westenhaver in *Buckeye* v. *Wolf*, page 258, is an accurate summary of the Hastings application:

> "Treating this abandoned application as a disclosure of the existing state of the art, it adds little or nothing to the Hastings publications, and, when examined, must be admitted to be impracticable and inoperative. He describes his invention as a hatchery in which better ventilation is secured by substituting a forced draft for gravity drafts. All that he claims as new in his apparatus is a centrifugal fan. The specification and drawings disclose an apparatus which, in the light of our present knowledge on the subject, is known to be impracticable and inoperative. As described, it merely drives heated air down one side of an egg chamber, and permits it to filter through fabric or perforated partitions into the egg chamber, and escape, if it can,

> on the other side. No provision is made for removing foul air, or supplying fresh air or conserving moisture. No well-defined channels for the circulation of the air are provided."

An article from a magazine entitled "Poultry Culture" issued in February, 1912, is referred to by the Court of Appeals at page 405 of its opinion in the *Hall* case. The sentence in this article not quoted by the Court, but following immediately after the one quoted, reads as follows:

> "This point, while upsetting a tradition, is of no practical significance because eggs of different ages should be kept apart as a matter of general convenience" (James R. 1406).

It is quite evident, therefore, that as late as February, 1912, Hastings had no conception of the value of or necessity for staged incubation, but on the contrary insisted that eggs of different ages ought to be separated.

In view of this statement emanating from Hastings, if it were a fact that at any time prior thereto Hastings placed eggs in the Davis incubator in any manner which might be said to involve staged incubation, it was purely accidental and unappreciated and its practical application was not understood or realized by Hastings. Such accidental use of a patented process or apparatus without realizing all its benefits or advantages cannot be accepted as invalidating a patent granted to one who first realizes and puts into practical use the invention which had theretofore been unknown (*Tilghman* v. *Proctor*, 102 U. S. 707, 710; *Eibel Process Co.* v. *Paper Co.*, 261 U. S. 45; *Boyd* v. *Cherry*, 50 Fed. 279, 283; *Wickelman* v. *A. B. Dick Co.*, 88 Fed. 264, 266, 267; *Franc-Strohmenger & Cowan* v. *Arthur Siegman, Inc.*, 27 F. [2d] 785, 788).

The District Court Judge who observed the witnesses on the stand, rejected this oral testimony, saying (Hall R. p. 370-371):

"Davis and his wife, to be sure, testified that Hastings practiced staged incubation, but Davis had a busy linotype establishment running in New York day and night; his wife was his bookkeeper. The record does not show that either of them actually saw the eggs set in staged incubation. Their belief in the presence of staged incubation obviously is attributable to the fact that they received bills for frequent shipments of setting eggs. They now say they supposed these eggs were set in the Hastings incubator twice a week, as received. But so far as their actual knowledge is concerned, it well may have been that the eggs received for setting were distributed between the Hastings incubator and the several Cyphers incubators, in use near by, wholly without staged incubation. Thus, on analysis, the practice of staged incubation in connection with this alleged prior use rests upon the verbal testimony of Hastings alone."

The Court of Appeals (R. p. 405) placed great reliance upon the fact that eggs were shipped to the Davis farm at short intervals, as indicative of the fact that the eggs were set in the Hastings incubator in staged incubation. There was no evidence whatever, except oral testimony about the size and frequency of the egg shipments which occurred more than twenty years ago. Furthermore, the Court appears to have overlooked the fact that Davis also owned and operated a number of old, single-stage Cyphers incubators and that they were run concurrently with the Hastings incubator (Hall R. p. 79). Because of that fact, it does not follow at all that, if eggs were received at short intervals, they were set in the Hastings incubator at short intervals.

In addition to these considerations, the District Court in the *Hall* case called attention to the dearth of reliable evidence in support of the Hastings defense. There was wholly lacking any contemporaneous documentary evidence to support the oral testimony or to show any operation of the in-

cubator whatever. Important practical witnesses who must have been informed on the subject and who were available, such as Orvis, the editor of a poultry magazine to whom Hastings is alleged to have disclosed his invention, Miller, the manager of the Davis farm, and others, were not called nor was their absence accounted for.

Furthermore, the Court of Appeals of the Second Circuit appears to have given no weight to the very pertinent comment of the District Court in the Hall case (R. p. 373):

> "But even if staged incubation was in fact used at this time and place, it does not follow that the entire method of Claim 1 was then successfully reduced to practice."

As stated above, the Hastings patent application shows the egg chamber enclosed top and bottom with a fabric covering, and the fan is outside of the chamber. Such a construction would necessarily restrict the flow of air through the egg chamber; in fact it would so dampen and impede the passage of the air as to make it extremely doubtful whether at any time more than a mere infiltration of the air into the egg chamber would occur. This observation was made by Judge Westenhaver in the *Wolf* case (*supra*). Hastings testified in the *James* case (R. p. 783):

> "Those fabric panels had the effect of checking the air flow and served no useful purpose. They were deleterious to incubation only to the extent of checking the amount of air flow; making the fan less efficient."

and again at page 785:

> "The presence of the fabric panels would affect quite materially the flow of air."

As noted above, in the course of the Patent Office proceedings in connection with Hastings' abandoned application for patent, it is stated that the velocity of the current of air in the Hastings incubator was "thirty feet per minute" (James R. p. 1039). This is an exceedingly slow speed, a small fraction of the speed of a man walking leisurely. It may well be that this low speed of air movement played some important part in the failure of the Davis incubator, and, if that same speed was retained in the Muskogee incubator, it may have been in part responsible for the failure there. In the Smith and James incubators, the average speed through the egg chambers is 135 to 140 feet per minute (James R. p. 672).

Another consideration of importance is that the incubator built by Hastings at the Davis farm was of substantially the same construction as that of the alleged prior use by Lawry which appeared in the *Waxham* case. In the Lawry alleged prior use, a chamber was provided in which eggs were set in staged incubation (which was not done in the use of the construction at the Davis farm) and in which a perforated partition, above and below, separated the chamber from the fan. The Circuit Court of Appeals of the Ninth Circuit rejected such a structure as failing to anticipate Smith, saying:

> "Lawry did provide for a large chamber of heated air in which the eggs were placed. He did provide small vents above and below this chamber through which the air entered and escaped from the incubating chamber. The air in the Lawry process was given some momentum by an electric fan, but the effect of this momentum was almost entirely dissipated by the fact that the current of air was forced through a large number of small openings and escaped through similar openings to return through narrow passages to the fan to be again circulated through the incubation chamber. The obvious purpose of Lawry in this method of in-

cubation was to supply fresh air without agitating the contents of the incubating chamber any more than was necessary to supply the fresh air. Apparently there was no effort to remove the heat from the incubating eggs by a current of high velocity. The plan was a failure and was abandoned and need not be further considered. We conclude that the Smith patent is valid."

This Court had before it this Lawry prior use in the *Waxham* case and rejected it as failing to anticipate Smith.

Another consideration to which the Court of Appeals appears to have attached no significance is that the Hastings incubator at the Davis farm, in addition to being purely experimental and abandoned after a brief trial, was also kept secret. In November, 1912, Hastings published the following statement (Hall R. p. 94):

"Finally in the winter 1910-1911, a small plant was constructed on the Davis Poultry Farm in Brooklyn, New York, and the idea fully demonstrated. This plant was not open to the public as its workmanship was crude and the applications to the Patent Office not completed."

Also, at page 786 of the James record, Hastings testified:

"He was hatching for himself alone, or I was hatching for him, his employee, and it was not public in the sense that we had public customers nor any bid made to the outside public to come and visit the hatchery, but Mr. Davis's friends and mine were shown the hatchery.

Q. And you kept it secret because of the fact that you hadn't filed a patent application at that time, isn't that correct?

A. I think that was my impression at that time, of not wanting the general public in, yes."

The incubator at the Davis plant was built to hatch 6,000 eggs. It was run only during a brief period in 1911; it was not run at all in 1910 as is stated erroneously by the Court of Appeals (James R. p. 719). Also, Hastings never had in it more than 2,000 eggs. It was never run, therefore, under conditions of load, and neither Hastings nor anyone else ever knew "how it would have operated had we filled it full" (James R. p. 778). It is quite evident therefore that its use at the Davis farm was a private experimental use which never put the incubator to the test and therefore could not serve to show whether or not success had been achieved. Whether it was ever run after Hastings left in May, 1911, is wholly a matter of conjecture, for the manager, Miller, who was in charge of the plant and was instructed by Hastings in its operation (James R. p. 777) was never called by either defendant, nor was his absence accounted for. The incubator was completely destroyed by Davis "along with a bunch of other trash" (Hall R. p. 91). The fact that Davis suffered financial reverses, sold the property and had to remove the incubator, relied upon by the Court here, is no answer to the admitted fact that the incubator was wholly dismantled and destroyed after a brief use. Had it been of any value whatever, Davis could have realized upon it, but it went the way of all the "trash" when he quit the farm.

Nor was the design or method of operation of the Davis incubator ever repeated or duplicated by Hastings, contrary to the suggestion of the decisions of the Court of Appeals in these cases.

Hastings moved from Brooklyn, N. Y., to Muskogee, Oklahoma, where in the year 1912 he built an incubator of a type and operating upon a principle entirely different from those of the Davis incubator previously built by

Hastings and from the incubators later built and patented by Smith. At Muskogee, Hastings built an incubator consisting of seven chambers, whose use served to divide the 21-day period of incubation into seven 3-day periods. The eggs were set in the first chamber and then moved to the second, third and so on, as the incubation developed, so that each chamber, supposed to contain 5,000 eggs, was filled with eggs of the same age. In this incubator, Hastings' idea was to operate each chamber at progressively higher temperature than the next preceding one. Ventilation was supplied from a single fan at one end of the series of chambers to which was connected a flue serving all of the chambers. Small openings in the top and bottom of each chamber connected with the flue, and the amount of air was regulated by the adjustment of slides over the tops of the openings; just as the temperature of a series of rooms may be regulated by the raising or lowering of windows in them, so could the temperature of the several chambers be controlled. The temperature of the chambers ranged over 10° variation.

This statement is made directly from the testimony of the only witness aside from Hastings who knew the principle upon which the Muskogee hatchery operated. This was Lieber, a witness for defendant, who said (James R. p. 890):

> "His idea was, according to my recollection, that he would have a continuous hatching all the time. That is, he could start eggs in one compartment, carry on for a few days, and then move them to another compartment and leave for a few days. And then move on for another period until they finally got down to the end. Yes, that is if he was crowded for space, as new eggs came in he would put the eggs in the first one, and keep on moving them, and he would be putting eggs in the first compartment and taking chicks out of the last one at the same time. And in the inter-

> mediate compartments would be eggs further advanced in the incubation. And he adjusted those slides so more or less hot air would go into each compartment, to control the temperature. The temperature of the different compartments was different. My recollection is that the temperature varied about ten degrees from the starting to the end."

The photographs and the major portion of the articles which appear in the *James* record relate to this Muskogee incubator. The fan shown in the photographs is a ventilating fan which Lieber supplied from a moving picture theatre in which he was interested. This fan is shown in the "Electrical World" article to which the Court referred.

It was admitted by Hastings that the incubator thus constructed and so equipped was a failure (James R. p. 793; 827). Attempt was made to explain the failure by ascribing it to lack of sufficient ventilation. This is probably partially true, but, in a broader sense, the failure was due primarily to a total lack of conception of the Smith principle of operation. In this Muskogee incubator, the temperatures in the various chambers were "stepped up" as incubation progressed. That is directly opposite to the principle of the Smith incubator, in which eggs of the varied stages of incubation are placed in one chamber where air movement is maintained at sufficient velocity to "circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature."

The claim is made that Hastings substituted at some later date a centrifugal blower for the fan shown in all the photographs, and that with this new fan the system worked better, but there is no proof of the purchase of this fan, or of its installation in the incubator. As noted above, the fan shown in the photographs, Exhibits 22-B-F, is not the fan Hastings said was installed.

Hastings fled Muskogee in the hatching season of 1912 never to return (James R. p. 810). An attempt was made to run the incubator without Hastings during the following year, but that was a failure also. Then the incubator was dismantled as no longer having any value, and, at the time of the testimony no trace of it remained. Although he went to other fields of experimentation Hastings never built another incubator like that at Muskogee (James R. p. 811).

In commenting on the Muskogee incubator, the Court of Appeals said (Hall R. p. 408) that this hatchery ran through the seasons of 1912 and 1913. The facts are that it was started in the Spring of 1912 and ran until May of that year, when Hastings left; and that an attempt was made to operate it during the following year, but only one hatch was attempted in 1913, and that was a failure. As Lieber said (James R. p. 883):

> "My recollection is that they only put in one batch of eggs and closed down the hatchery when the hatch was unsatisfactory";

and on page 885:

> "We could not figure out its failure to hatch in 1913, except on the theory that Milo Hastings, the inventor, was the only man who knew how to operate it".

The Court said also that the operation at Muskogee was along the same lines as that at Brooklyn. Quite the contrary is the fact. As stated above, there were radical differences as to the number of egg chambers, the temperatures maintained in the egg chambers, the movement of the eggs in the chambers, and the provision for controlling the flow of the air.

Hastings next went to Port O'Connor, Texas, and there built another incubator on a still different plan, but that one was used for only a single trial run of 720 eggs and

was then abandoned (James R. p. 813). This, however, did not prevent the publication of an article in the "Technical World" of April, 1913 (James R. p. 1514), in which this third incubator was represented as a successful going hatchery of 100,000 egg capacity.

In 1922, a visit to Port O'Connor and Muskogee revealed only the abandoned site of the one, and no trace of the other (*Buckeye* v. *Wolf*, p. 258).

This, in short, is the history of the repeated efforts and failures of Hastings to solve the problem of mass incubation. No amount of publications and testimony can contradict and offset the story of abandoned experiment and failure which it portrays. Every Court except the Court of Appeals of the Second Circuit has rejected the evidence as failing to measure up to the requirements of proof to anticipate an issued patent. As was said by the Court of Appeals of the Third Circuit in the *Cooley* case: "The result was negative, and judging from what happened to the hatcheries, it was not successful" (p. 455).

It is clear that the process of mass incubation was the result of the inventive genius and perseverance of Smith. The art is indebted to Smith for the advance which has been made. The experiments of Hastings led nowhere and accomplished nothing. After Hastings was all through with his efforts, the art was still no further along toward the goal. The publications and testimony disclose nothing more than abortive efforts, and at the end of them Hastings gave up, leaving the problem unsolved. However near he may have gotten to the goal, he never achieved it.

CONCLUSION.

We respectfully request that a writ of certiorari be issued as prayed for.

Respectfully submitted,

SAMUEL B. SMITH,
By CHARLES NEAVE,
DEAN S. EDMONDS,
A. L. ELY.

APPENDIX.

Filed April 23, 1925.

UNITED STATES DISTRICT COURT,

DISTRICT OF NEW JERSEY.

THE BUCKEYE INCUBATOR COMPANY and SAMUEL B. SMITH,
Plaintiffs,

against

ELDEN E. COOLEY,
Defendant.

BODINE, District Judge:

This is a suit for infringement of the Smith patent 1,262,860 for a method and apparatus for hatching eggs on a large scale, and patent 1,263,138 for a specific construction of racks and egg trays for use in incubators of large capacity. The patents were held valid in the case of Buckeye Incubator Company and S. B. Smith against D. A. Wolf, reported in 291, Federal 253, affirmed Circuit Court of Appeals, Sixth Circuit, 296 Federal, 680.

The case is before this court on the same record as before Judge Westenhaver, except for the testimony of Milo Hastings with respect to his activities during the period from 1910 to 1918, and the testimony with respect to the Freas patent 1,165,958 for an improvement in a heating system for constant temperature baths in laboratory work.

Judge Westenhaver's decision was adverted to by the Circuit Court of Appeals as completely dispositive of the question of validity. He adverts to the testimony with respect to Hastings' alleged use in the following language:

"The evidence of his use or disclosure consists of four newspaper articles and his rejected application for a patent. The newspaper articles were published in the 'Dollar Hen' in the year 1909, in 'Poultry Culture' in February, 1912, in 'Boston Sunday Globe' November 10, 1912, and in the 'Technical World' in April, 1913. Of these articles defendant's expert says that the disclosures of the 'Poultry Culture' article are the nearest and most specific description of Hastings' use or construction. The earliest article in the 'Dollar Hen' may be disregarded, as Hastings there merely describes a process for maintaining temperature in cold storage and suggests how it may be applied in a hatchery. It does not purport to describe an apparatus or ever to have been put to any use. The other articles relate to two hatcheries said therein to have been constructed by Hastings, one at Muskogee, Okl., and the other at Port O'Connor, Tex. Whether either hatchery was a commercial and practical success cannot be discovered from the articles, and it is not proved by the evidence."

Generally speaking, Hastings' testimony added little to his published articles. After his book the "Dollar Hen" was written, he was employed by one Walter B. Davis, who had a small poultry farm in Brooklyn and constructed in the cellar an incubator of 6000 egg capacity, in the fall of 1910 or early in 1911. In the present day descriptions of this hatchery and the drawings now made, a complete anticipation is indicated. The surprising thing, however, about this Davis hatchery is that it was destroyed in 1913, when Davis went out of business and was never used to hatch more than 2000 eggs at one time. If the incubator had merit, it is improbable that it would have been destroyed so soon after its construction.

S. B. Smith holds an exclusive license to build incubators with a capacity of 25,000 eggs or over. The Buckeye Company, the assignee of the patents, had reserved to itself

the exclusive right to build incubators up to and including a capacity of 12,500 eggs. The holders of the entire rights under the patents are before the court as parties plaintiff, it is immaterial what rights they may have as between themselves if the patents be valid and infringed.

The specifications in the Smith patent 1,262,860, so far as pertinent are as follows:

> "The improved apparatus and method, is particularly designed for extensive operations wherein a chamber of large dimensions is adapted to contain thousands of eggs in separate trays arranged in tiers and the method of heating is such that the heated air is adapted to the eggs in various stages of incubation. There is a forced circulation of hot air through the chamber which is adapted preferably to maintain all eggs at temperatures between 100° and 105° Fahrenheit approximately and this improved system contemplates that fresh eggs will be placed in a horizontal plane, preferably by means of trays supported in horizontal planes, and after the eggs have been subject to the circulation of hot air for a predetermined time (the air circulating largely around the eggs) they will be placed in a tilted or inclined position in a different location but still subject to the same column of air and at this period of incubation they will be tilted in different planes at regular intervals during the time they remain in this latter position, and after they have remained for a predetermined time they will be again moved to a different position with reference to the forced circulation of hot air and so placed therein that the air will tend to keep the eggs below 105° temperature, and in this last named position the air will be forced to pass between the different eggs and will in effect act as a cooling medium for the eggs. The temperature of circulating air should be such as will prevent the eggs in the early stage of incubation from falling below 100° and the speed or velocity of the circulating air should be such as to carry the heat away

from the eggs in the later stage of incubation and thereby hold the temperature of those eggs at 105° or slightly below that. It is manifest that the temperature will remain practically the same throughout the column of eggs, but the air is impelled with sufficient velocity to carry the heat away from the eggs which happen to be in the advanced stage of incubation.

* * * * * *

As explained later the trays near the bottom are preferably arranged so that the air is forced to pass between the eggs in each tray thereby cooling or holding the temperature of those eggs down.

* * * * * *

It, therefore, appears that the improved apparatus and method contemplates the application of hot air circulating in a column with such speed as to keep the temperature substantially uniform and so arranging the eggs that the fresh eggs are placed at one point in the column of air and held in a horizontal plane until they reach a predetermined stage of incubation and then put at a different point in the same column of air and kept in planes inclined to the horizontal and thereafter placed at such a point in the column of air that the forced draft of air acts to hold the eggs at a uniform temperature and to prevent them from becoming overheated and thereafter placing the eggs into final position for the hatching operation."

All of the claims are in suit. The first three, as follows, probably embody the invention.

"1. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a current of heated air, said current being created by means other than variations of temperature

and of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified.

"2. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a power driven current of heated air in an adjacent chamber through openings into the egg chamber, said current being of sufficient velocity to circulate, diffuse and maintain the air throughout the egg chamber at substantially the same temperature whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified.

"3. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a vertically directed current of heated air in an adjacent chamber to circulate in said egg chamber through upper and lower openings between said chambers, said current being created by mechanically moving means of such velocity as to diffuse and maintain the air throughout the egg chamber at substantially the same temperature whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in the less advanced stage for the purpose specified."

It is said that the patent does not disclose with sufficient clarity the invention. Since, however, the Circuit Court of Appeals for the Sixth Circuit, has held the patent valid, it seems hardly necessary to go into the question of the sufficiency of the disclosure. There is little doubt, however, but that the patent expressly discloses the invention, so that it may be practiced by those reasonably skilled in the art.

The defendant, Cooley, knew about the litigation in Ohio. He procured, after that suit, a Buckeye incubator (No. 7), called in local carpenters and mechanics and built similar units. These units were all operated during the seasons of 1923 to 1925 inclusive. Infringement seems clear.

The tray patent No. 1,263,138 is merely a detailed patent pertaining to structural details and was held valid in the Sixth Circuit and seems to have been slavishly imitated by Cooley.

Smith is today operating an incubator with a million egg capacity. His gross sales, in 1925, were nearly a million dollars. His royalties from the Buckeye Company for 1925 were forty-two thousand dollars. It is estimated that the gross sales of incubators, embodying the invention, was in excess of one and three-quarter millions of dollars for that year. From the small beginning of a few years ago the business has grown to respectable proportions. Obviously, there is commercial success.

Of the prior art patents, a number were introduced showing means for ventilating rooms and drying vegetables and meats by means of forced drafts. The analogy is not at all clear. Other patents were introduced showing the principle of stage incubation and methods for providing for the escape of foul air. There was also the Freas patent No. 1,165,958 relating to heating systems in bacteriological incubators. None of the prior art patents, however, disclose the Smith arrangement or the Smith method, nor are they in the same art.

There is no testimony that any of the prior art patents were capable of hatching chicks. The cold storage patents, patents for aging cigars and for drying vegetables and incubating bacteria have no applicability.

The reasoning of the Hastings prior use is not persuasive against the patent. Smith never lost sight of results. Hastings never seems to have procured results. He built one sort of an incubator and the next year changed to another. The following year he built another kind of incubator and so on. Business success never followed his adventures. The testimony with respect to the construction of the Davis hatchery is not convincing. The kodak pictures offered in evidence disclose little. The drawings made on the eve of the present suit are, at best, Hastings' recollection of what he now fancies he did in 1911. It seems impossible that the methods disclosed in his drawings should not bear a resemblance to Smith's successful incubator rather than his failures. Had the Davis hatchery been a success there seems little reason to suppose that the money and time expended upon it should have forthwith been destroyed, and that Hastings should not have pressed his application for a patent. When he went to Muskogee the next year and built a hatchery, described in the Poultry Journal for February, 1912, he used another method. The Muskogee hatchery was a complete financial failure. Hastings says because of the poor quality of eggs and the low charge for hatching. The summer of 1912 found him at Port O'Connor, where a hatchery was built with a capacity of 150,000 eggs. By this time Hastings had discovered a means for turning eggs. At Port O'Connor, Hastings was not using hatching compartments open at the ceiling nor the means which he said existed in the Davis hatchery of having open outer door and free communications between the egg chambers and the outside corridor. Hastings undoubtedly had a greater measure of success, but it seems probable that he never had in com-

bination with a fan, restricted openings for foul air, eggs in different layers in a closed chamber and the currents of heated air so created as to diffuse and maintain the air throughout the egg chamber at substantially the same temperature, so that the units of heat were carried from the eggs in the more advanced stages of incubation to those in the less advanced stage.

Like many others in the course of his experiments he had various notions and various thoughts which he never embodied in a workable piece of mechanism.

Hastings' testimony adds only this to the Hastings' writings, that one is satisfied that his experiments were never in any definite direction and that he never achieved the point of successful operation.

Smith's alleged prior public use as recorded in Reliable Poultry Journal article of August 20, 1920, and the other publications with respect to his earlier work, might well be characterized as Judge Westenhaver did the Poultry Journal article as a flamboyant newspaper interview, in which a high degree of accuracy is not expected nor usually found. Smith and Hastings were working in different places for the same result, but there is nothing in the record to indicate that Smith, prior to his discovery, had placed his hand upon invention. He was sometimes boastful and his boasts were sometimes recorded in the public press, but there is nothing to show that he had placed in public use the patented device. Hastings was and is boastful. Convincing proof of his alleged method and device is certainly lacking. Success never rewarded his attempts.

The plaintiff may have a decree accordingly.

(Filed Feb. 8, 1927.)

IN THE

DISTRICT COURT OF THE UNITED STATES

FOR THE DISTRICT OF OREGON.

THE BUCKEYE INCUBATOR COMPANY and SAMUEL B. SMITH,
Plaintiffs,

vs.

ARCHIE E. STONE,
Defendant.

REPORT OF THE MASTER-IN-CHANCERY.

To the Honorable, the Judges of the above entitled Court:

Pursuant to the decree of this court, made and entered on the 10th day of November, 1924, the undersigned Master-in-Chancery in and for said court and cause, submits herewith his report as follows:

In accordance with the provisions of the decree, and the practice of the court, the Master set said cause for hearing and required the defendant to render upon oath complete, definite, clear, and correct statements of account, as provided by Equity Rule No. 63, of the number of the incubators, and the capacity of each incubator made and used by him in violation of the plaintiffs' patent, and held to be an infringement thereof in this suit, containing the gains or profits made by him in the operation of the infringing incubators, and giving the dates and amounts of the sales of chicks incubated in the infringing incubators, and to submit for inspection all of the accounts, books, vouchers,

and records of every kind and description in which said data was originally entered, all accounts, books, vouchers, and records showing the cost of constructing the infringing incubators, and all records and documents relating to the operation and sales of the product resulting therefrom, and complete drawings and detailed descriptions properly verified, of any and all incubators then in use or theretofore used by him, built subsequent to the bringing of this suit and claimed by him not to be an infringement of plaintiffs' patents, making a full and complete disclosure of the construction and operation thereof, together with the number of chicks incubated therein, with detailed statements of the cost of operation, the dates and amounts of sales, and profits and gains made therefrom.

The defendant having made it to appear, by affidavit, that on December 23, 1924, all of his buildings, including all the incubators and hatching devices, were totally consumed by fire, and that he was not then making or using any incubators, or parts upon which the plaintiff has or claims patent, and that by reason of said fire he was unable to procure the necessary drawings and detailed descriptions disclosing the construction of the incubators complained of in plaintiff's complaint, the hearing was postponed, and thereafter the defendant made showing by affidavit which is made a part of this report, marked Exhibit I. Thereafter, and on July 24th, 1925, upon motion of the plaintiffs, the Master set said cause for hearing, to be held on August 12, 1925, and issued an order making similar requirements of the defendant as hereinbefore set forth.

Thereafter hearings were had before the Master, the plaintiffs appearing by Messrs. Border Bowman and Ralph C. King of solicitors, and the defendant appearing in person and by Mr. David E. Lofgren, his solicitor; testimony was adduced from witnesses called by both parties, by exhibits made a part of the record, and by depositions

duly taken upon commissions, all of which are submitted and made a part of the Master's report, and which are hereinafter scheduled and identified.

The Master's report, for convenience and to avoid confusion, is divided into two parts, as follows: the first, relating to the assessment of damages upon the machine which was admittedly an infringement of plaintiff's patent, and second, relating to the question of infringement, based upon the subsequent machines built and used by the defendant, and assessment of damages by reason thereof.

The Defendant's First Three Machines.

The capacity of the defendant's first machine was 4480 eggs, and the Master finds that it was used by the defendant for making at least two hatches. Thereafter, and prior to the decree, the defendant built and operated two other machines, one having a capacity of 3200 eggs, and the other having a capacity of 12,800 eggs. The defendant produced no books or records showing the cost, receipts, profits, gains or losses, and his oral testimony upon this subject is vague and unsatisfactory. The Master does not feel warranted in relying upon it. There is competent and undisputed testimony that a reasonable royalty for the use of a machine embodying the essential elements of plaintiffs' patent is ten cents per egg capacity, and the Master finds that such sum is a reasonable royalty. It appears, however, that before the manufacture and use of the second and third machines, the defendant destroyed his first machine and used the material thereof, at least in part, in the manufacture of the succeeding incubators. A deduction of the capacity of that machine should be made from the joint capacity of the second and third machines, i. e., that 16,000 less 4480, or 11,520 egg capacity.

The Master finds that as to the first machine, the plaintiffs are entitled to decree against the defendant in the sum of $448.00.

The Master finds as to the second and third machines that the plaintiffs are entitled to decree against the defendant in the amount of $1152.00.

Defendant's Present Incubators.

As to the incubators now in use by the defendant Stone, as well as the second and third machines, he makes strenuous claim that there is no infringement, and bases this claim upon the following information:

1. That the plaintiffs' patent is invalid.

2. That it has been anticipated by Milo C. Hastings in 1912 and 1913 at Muskogee, Oklahoma, and by R. C. Lowery at Pacific, Missouri, and by previous patents issued in analogous arts.

3. That its only patentable feature is a central corridor with egg chambers on one or both sides, down which corridor the heated air is forced vertically, escaping into the egg chambers at the bottom, striking the eggs and being circulated around them up to the heating chamber at the top, where it is reheated, again caught by the fan, and the cycle repeated.

4. That with the exception of the first machine which was dismantled, Stone works upon a very different principle, in that while he has a heating chamber and a forced circulation of air, he blows the heated air directly upon the eggs and does not use a central corridor, and that the air is not driven down in a vertical direction, but is driven in a horizontal direction, directly through the upper chamber or chute, and when it reaches the far end of this chute it circulates downward to a second heating chamber, is caught by a second fan there, and is blown again in a horizontal but opposite direction through the second egg chamber or

chute to the far end, where it ascends in the first heating chamber until caught by the first fan, and the cycle is repeated.

He further claims that by reason of his horizontal circulation of the heated air he obtains what he calls a variable temperature in each chute, and that the temperature of the air in the upper part of each chamber is higher than it is along its floor, and that by changing the trays from top to bottom he subjects the series of eggs in the same stages of incubation to a variation in temperature, which he claims is similar to that used by the humble hen, and results in stronger and healthier chicks.

In order that the problem presented in this suit may be more readily appreciable, a brief statement of the history of incubation should be made. The art of artificial hatching is not new. It was successfully practiced by the ancient Egyptians, but not until recent years had any method been devised whereby huge quantities of eggs could be incubated in a comparatively small space and in superimposed layers more than two in number. Buckeye Incubator Company vs. Wolfe, 291 Fed. 253.

The difficulties presented arose from the fact that in the process of incubation the egg generates animal heat and absorbs oxygen, and gives forth carbon dioxide, and therefore the eggs in the inner tiers would become over-heated and not properly revitalized by fresh oxygen. The problem then which faced Smith, Hastings, and Lowery was not to furnish heated air so that one or two layers of eggs would hatch, but was how to furnish and apply heated air and moisture to thousands of eggs in tiers in such a manner that the temperature would remain approximately the same throughout the entire mass, the foul air expelled, and fresh air and moisture admitted, giving to the eggs in the center of the column the same conditions as those at the ends and sides of the column.

Smith claims that he is the first man to have successfully done so; Stone contends that both Hastings and Lowery had achieved the desired results prior to the time that Smith claims he invented and perfected his device.

Before considering and reporting upon the validity of Smith's patent the Master will consider whether or not Stone's incubator infringes upon Smith's patent. The essence of both devices is that they have suitable outlets for the escape of foul air; suitable apertures to bring in fresh air; both avoid the fatal effect of "hot spots" in the column of eggs by the use of a confined rapidly moving current of air, and both get the best results by placing eggs in the highest state of incubation at a point in the incubator where the air from the fan will strike them before heating the eggs in the lower stages of incubation. Both require means whereby after the air has passed through the column of eggs, it will be returned to the heating chamber for reheating and be again propelled by fans in the stated cycle.

If Smith's machine was placed on its side there would be no essential difference between his apparatus and Stone's except that Stone places eggs in both corridors. The only function of the center corridor of Smith's incubator is to permit two egg compartments to be heated by the same column of air, and to provide a working space within the machine for handling the eggs.

Neither Smith nor Stone could operate their incubators except by two chutes or corridors. It is apparent from Stone's testimony that he could not operate his incubator by placing the eggs in both chambers were it not that he has two heating chambers and two fans, one at the end of the top chamber and the other at the opposite end of the lower chamber. The only difference in result claimed by Stone is that he claims to create a variation in temperature between the top and bottom of each chute. The tests made by the plaintiffs, after due notice to the defendant of the time and place where they were held, upon a machine

in all practical respects identical with Stone's, do not disclose any appreciable variation, and the Master is not impressed by the testimony of the defendant that such a variation exists or that it has any effect whatsoever upon the results obtained. Stone claims that he obtains exceedingly healthy and vigorous chicks by reason of this variation, but there is no evidence that they are stronger or more vigorous or in any way superior to those hatched by the Smith incubator. In fact, it appears from the testimony that Stone's ideas on incubators have been the result of a study of the Buckeye Incubator, which is licensed from Smith, and that Stone has been engaged in a readily apparent attempt to use the principles, methods and means disclosed by Smith and to avoid the effect of his infringement through trifling and immaterial changes. Both machines operate by means of currents of air which descend and ascend; in both the current of air is forced down vertically; in both it ascends vertically. The length of the ascending and descending columns do not affect, in the slightest degree, the operative value of the principle.

Mr. Stone uses all of the elements of the Smith machine, and merely changes their location in a way which neither produces a definite nor a better result. He, therefore, is guilty of an infringement.

The Master finds that the principles and elements of the Stone incubator are in all essential respects identical with those of the Smith incubator, and that he has infringed upon Smith's patent, if Smith's patent is valid.

The next and more difficult question is whether Smith was anticipated by either Hastings or Lowery. Hastings' machine was operated in 1912 and 1913. It consisted of a series of enclosed egg chambers, over the top of which ran a chute having a small opening into each chamber. Along the bottom of the chambers ran a second chute having openings from each chamber. The heating device was placed in a separate chamber adjacent to the egg chambers,

and the air forced by means of a fan therein into the upper chute, escaping from the apertures in the chute into the chambers and from the chambers into the lower chute and then returned to the heating chamber, and the action repeated. Shutters or doors were placed so that the heated air could be excluded from any one or more of the chambers. The first device installed by Hastings did not confine the heated air in any chute, while in the second it was closely confined and had very limited openings. In the first device, according to the testimony of S. J. Ward, not over five percent of the fertile eggs hatched. By means of the latter device forty to fifty percent of the fertile eggs hatched, but the hatchery was not a success, and Hastings did not discover any means to overcome the defects which were inherent in the apparatus. In fact, Hastings asked Mr. Ward, "Why don't this thing hatch?" to which the witness answered "Milo, I don't know, unless it is the acid or effect of the paper that you are using to line it." John G. Lieber, who was financially interested in the Hastings hatchery, testifies that hatches of about fifty percent were obtained. It is apparent, however, that Lieber was interested and more or less hostile with the hope that at some stage of the litigation of Smith's patent and the infringement suit brought by the Buckeye Incubator Company against Cooley, he might receive a return of the money he lost in the Hastings venture. His knowledge of Hastings' machine is dependent upon memory, his knowledge of the operation is rather vague, and the fact remains that the device was abandoned and it was not a success. Out of the four persons whom Lieber claims were satisfied customers, three of them testified that the hatchery was a failure. O. S. Dierfield who attempted to operate it after Hastings abandoned the project, found that the machine worked successfully when only partly filled, and unsuccessfully when running to capacity. Hastings' later effort at Tiffin, Ohio, in 1917, also resulted in hatches of not over

fifty percent, and the project was abandoned. His efforts in Port O'Connor, Texas, were abortive, and the hatchery was never put in operation.

Lowery operated a hatchery at Pacific, Missouri, as late as June, 1917. His modes of operation were almost identical with that of Hastings. The hatchery was abandoned in 1917 and there is no evidence that it was an operative success.

The efforts of Hastings and Lowery were matched by the efforts of the patentee Smith, commencing in 1906 at Lykens, Ohio. All of them were experimenting with the forced circulation, none of them were successful, and the main reason for their lack of success seems to have been that they had not yet struck upon the fact that there must be sufficient force to the circulation to carry the heat from the eggs in the higher stages of incubation to those in the lower stages, thus in effect cooling the former and heating the latter, but they attempted to force the air into the chambers by openings which were too small, which resulted either in insufficient circulation or if the pressure from the fan was sufficient to give circulation, the rate of speed would be so high as to unduly deprive the eggs of their moisture and thus prevent a successful hatch. They had not discovered that in addition, there must be outlets for vitalized air and inlets for fresh air of sufficient size to furnish the hatching eggs with enough oxygen for successful incubation. The three men were experimenting along the same lines, having in many respects the same ideas, but they were only experiments. The problem which they were endeavoring to solve was not to invent a process or device by means of which some of the eggs could be hatched in tiers, for it is apparent from the history of the art and the experiments of all three, that this was possible, but their problem was to discover a process, device and means whereby a sufficiently large proportion of the eggs so placed in such an incubator could be hatched, and virile, healthy chicks obtained.

The evidence clearly shows that even with a faulty circulation of air, even with insufficient ventilation, and even with the development of "hot spots" in the center of the column of eggs, a varying percentage of the eggs in the column would hatch. Until, however, that percentage could be increased so that the results of the operations would render a profit to the hatchery, the problem was not solved.

The Master finds from the testimony that at least fifty percent of the fertile eggs placed in the incubator must be hatched before the operation passes from the debit to the credit side of the ledger. This, Hastings had not succeeded in doing, either in Muskogee, or in his later experiment at Tiffin. Both of his attempts were failures and were abandoned, and the fact of such failure and abandonment is cogent proof that he had not solved the problem with which he had been confronted.

There is no evidence in the record as to the percentages of hatches obtained by Lowery's method. It was abandoned in 1917, although the reasons for the termination of the enterprise do not appear. The evidence of the witnesses of the plaintiff and an examination of the sketches of the apparatus indicate that he had progressed practically as far and no farther than had Hastings and Smith up to the time that Smith perfected and patented his device.

The Master is not unmindful of the fact that it is not required of an inventor that the machine, device or process as disclosed by the drawings and specifications be a commercial success, but it is essential that it be an operative success, i. e., that in practice it will do what it is intended to do and perform and bring about the results which will constitute a material advance of the art.

In the Telephone Cases, 126 U. S. 536, 31 Law Ed. 863, the Supreme Court prescribes the test to be applied:

> "The law does not require that a discoverer or inventor, in order to obtain a patent for a process, must have succeeded in bringing his art to the highest de-

> gree of perfection. It is enough if he describes his method with sufficient clearness and precision to enable those skilled in the matter to understand what the process is, and if he points out some practicable way of putting it into operation."

In view of the previous state of the art, it cannot be said that either Hastings, Lowery or Smith had contributed to its advance until such time as they had described a method with sufficient clearness and precision to enable one versed in such matters to understand what the process was, and a practicable way to put it into operation. Neither the apparatus of Hastings or Lowery were practicable and did not meet the problem involved.

Hastings and Lowery may be said to occupy the same position in the art of incubation that Reis occupied in transmitting sound by means of electrical current. And the Supreme Court in the case last quoted says:

> "It is not contended that Reis had ever succeeded in actually transmitting speech, but only that his instrument was capable of it if he had known how. He did not know how and all his experiments in that direction were failures. With the help of Bell's later discoveries in 1875, we now know why he failed."

It may be said of the Hastings and Lowery machines that by changes which would permit the free passage of heated air into the chambers and egress from them, and by providing sufficient means for the expulsion of foul air and the admission of fresh air, they would be capable of doing what Smith accomplished. But they did not, and neither Hastings nor Lowery were capable of discovering the defects and remedying them. Smith did, and as said in *Proudfit L. L. Co. vs. Kalamazoo L. L. B. Co.*, 230 Fed. 120:

"It may have been under their very eyes, they may almost be said to have stumbled over it; but they certainly failed to see it, to estimate its value and to bring it into notice. Who was the first to see it and understand its value, and to give it shape and form and bring it into notice and urge its adoption * * *. Now that it has succeeded it may seem very plain to any one that he could have done as well. This is often the case with inventions of the greatest merit."

In this case Smith saw it, Smith gave it shape and form, brought it into notice and urged its adoption. We may wonder that Hastings and Lowery did not see what was wrong but the fact remains that they did not, and their machines were failures and were abandoned. When it is remembered that the very object of Hastings, Lowery and Smith was to devise a process and apparatus which would hatch enough eggs arranged in columns, tiers, and layers that would pay the costs of the operation, and of the eggs put into the incubator, and in addition give a reasonable margin of profit, it cannot be said that any invention had in fact been made, or any advance in the art achieved until that result had been accomplished. This, Hastings never was able to do and the evidence does not show that Lowery's incubator was any more successful than that of Hastings and it was abandoned.

The Master finds, therefore, that neither Hastings nor Lowery anticipated Smith.

The last question to be considered is whether the patents cited by the defendant in other arts are analogous and anticipate Smith.

The defendant has submitted to the Master the following described patents which he claims anticipate one or more of the claims of novelty made by Smith:

No.	559,676	T. R. C. Christianson
	916,454	V. C. Koons
	1,137,752	Geo. E. Goldstein
	525,967	F. G. & A. C. Sargent
	691,837	V. S. Bell
	779,759	A. H. Berry & E. C. Woodward
	206,389	Thos. Clegg
	143,912	S. R. Kerby
	1,244,429	Nicola D. Agostino
	173,016	C. N. & E. A. Jones
	211,821	Jas. H. Wickes
	477,856	J. W. Doty
	544,785	J. H. Gore

Christianson's patent, 559,676, is a device for storing eggs and an apparatus for turning them so as to keep them fresh. The purpose and function of the device is to turn trays of eggs arranged in tiers by a single mechanical operation so that the yolk will be changed in its position in the albumen and remain embedded therein and not adhere to the shell. Smith makes no claim in his patent to have discovered that it is necessary to turn the eggs which are being hatched. That is as old as the art itself. The practice is carried on by the hen (see Testimony of Stone). It is recognized as being necessary in any kind of an incubator and in those having but a single layer of eggs it is done by hand. All that Smith claims upon the matter of turning the eggs is that he has a simple device whereby the entire tier can be turned in a single operation by means of a device which he patented. Smith's method and device is entirely different from Christianson's, and there is no anticipation there. It is further to be remembered that the defendant Stone in the instant case has abandoned and dismantled the turning device, and it is not claimed that the defendant in his later machines has infringed upon that device, in fact he turns each tray of eggs by hand, lifting them out of the incubator, turning

the frame and re-inserting in the case. Christianson's device is not adapted nor intended for incubation, and the art is by no means analogous, nor would an examination of the patent or the apparatus therein described suggest to a mechanic its adaptability as an incubator. The Buckeye Incubator Company vs. Wolfe, 291 Fed. 253, 264.

Koons' patent, 916,454, is for an incubator. It is apparent that it would be suitable only for a single layer of eggs, and it would be utterly impracticable to use the apparatus for hatching eggs in multiple tiers. It provides for an inlet for fresh air and an outlet for heated air, but there is no means provided for a forced circulation. In fact, it is apparent that the purpose of the inlet and outlet was not for ventilation but to provide a natural circulation, the heated air after passing around the eggs escapes at the top and its place taken by the fresh air admitted from the bottom. The circulation is obtained by reason of the difference of the weight and density of the heated air over that of the colder, heavier, fresh air. In other words, in an air tight room there would be no circulation of air; by opening the top of the windows at one end and the bottom of the windows at the other end, a circulation throughout the room would be obtained. Incidentally, if the incoming air were fresh, ventilation as well as circulation would result, but so far as Koon's patent is concerned the object of the inlets and outlets was to obtain circulation and not ventilation. The Master finds that Koon's patent is not an anticipation of the Smith patent.

Each of the other patents cited are either of drying fabrics, food products, or evaporating fruit, or aging cigars. Their very purpose is entirely different from that sought by Smith in incubation. The evaporators of the dryers remove moisture, the object of Smith and all other manufacturers of incubators is to conserve moisture; the use of any one of those apparata as an incubator would result in a flat failure, nor can it be said that they are in analogous art, and if Smith had studied each device and had finally

come to the conclusion that by making changes and adopting part of the principles or all of the principles and the elements of the various devices, they could be used in incubation, he still would have invented a process and means of carrying the process into execution.

The Master finds that none of the patents cited anticipate Smith.

Assessment of Damages on the Present Machine.

Having found that the Smith patent is a valid patent, and that the machines now used by Stone are an infringement of that, the Master passes to the question of assessing the damages. In view of the unsatisfactory showing by Stone as to the number of eggs hatched, the prices obtained, the cost of operation, the difficulty of arriving at any accurate estimate of profits and gains derived by Stone, the Master feels obliged to resort to the reasonable royalty heretofore found, and to assess the damages against Stone by that basis.

It appears from Stone's testimony that the egg capacity of his present machine is 100,000 eggs (Stone—Direct—page 42).

The royalties upon that capacity would be $10,000.00, but inasmuch as the plaintiffs in their brief make claim for $5,200.00, the Master assesses the damages with regard to the present machine at $5,200.00

The Master does not believe that the facts or circumstances in the case warrant a recommendation that the damages be increased by the Court as provided for in the statute.

The Master transmits with his report the following records and documents:

1. Transcript of testimony taken before the Master, together with exhibits 1 to 9 of plaintiffs, and A to J of defendant.

2. The deposition of Wm. H. Hopple.

3. The deposition of Samuel J. Ward.

4. Deposition of Rees Hicks.

5. Depositions of George Cugley and L. C. Sturgis.

6. Depositions of L. A. Corey, F. J. Anderson, R. F. Schanafelt, John G. Lieber, Huston A. Hogan, and L. W. Pitts.

7. Depositions of S. B. Smith, C. R. Jenney, and Joseph I. Taggart.

8. Deposition of O. F. Deerfield.

9. Copies of patents referred to in report and cited by defendant.

10. Brief of plaintiffs.

11. Brief of defendant.

12. Reply brief of plaintiffs.

The Master recommends that decree be entered in favor of the plaintiffs and against the defendant in the sum of $448.00 upon his first machine, the sum of $1152.00 on the second and third machines, and the sum of $5,200.00 upon the present machines now used by the defendant, and that the plaintiffs further have and recover of the defendant their costs and disbursements.

The Master's fees and compensation have not been paid, and the Master respectfully prays the Court that the amount thereof be fixed in such sum as your Honors may deem proper. The Master will make such further and other reports as may be necessary in the premises.

Respectfully submitted,

(Sgd) Robert F. Maguire,
Master-in-Chancery.

IN THE EXCHEQUER COURT OF CANADA.

Between:

HIS MAJESTY THE KING,
on the Information of the
Attorney-General of Canada,

Plaintiff,

No. 16188 and

THE SMITH INCUBATOR COMPANY and
THE BUCKEYE INCUBATOR COMPANY,

Defendants.

ANGERS, *J.*

Judgment rendered January 29, 1936.

This is an action instituted in the name of the Attorney-General of Canada to impeach a patent of invention number 217,777 issued to Samuel B. Smith on April 18, 1922, for an alleged new and useful improvement in incubators.

The defendant Smith Incubator Company is the owner of said patent as assignee of said Samuel B. Smith and the defendant The Buckeye Incubator Company is a licensee.

The action seems to me properly instituted under section 37 of the Patent Act, R. S. C. 1927, chap. 150 (now section 60 of the Patent Act, 1935, 25-26 Geo. V. chap. 32) and subsection (b) of section 22 and subsection (b) of section 30 of the Exchequer Court Act; the mode of procedure is regulated by rule 11 of the General Rules and Orders of this Court.

The grounds of invalidity raised in the particulars of objection may be briefly stated as follows:

* * * * * *

Schedule 1 above mentioned contains a list of 19 American patents and one German patent as well as a list of various publications and it refers to several prior uses, particularly that of Milo M. Hastings, of Muskogee, Oklahoma, commenced in 1912.

Copies of seven of the nineteen American patents and a copy of the German patent were put in evidence; they form part of a binder marked as exhibit 2.

Of the publications mentioned in schedule 1 only pages 103 to 107 of "The Dollar Hen," a book written by Milo M. Hastings and published in New York in 1909, were filed; although included in the binder exhibit 2, these pages were numbered as exhibit 3. Other publications, however, not enumerated in the list contained in schedule 1, were filed by consent, comprising three pages of a work intitled "Artificial Incubating and Brooding" whereon appears an article dealing with "The Origin of the Cyphers Incubator," three pages of the journal "Poultry Culture," of Topeka, Kansas, of February 1912, containing an article under the caption "The Mammoth Incubator out-mammothed," two pages of the issue of April 1913, of the review "Technical World" containing a short item entitled "Hatching chickens by wholesale" and an article by Wm. H. Day, lecturer in physics, on the subject of "Humidity in relation to incubation," published in the Bulletin of the Ontario Agricultural College of Guelph in March 1908; all these publications are included in the binder exhibit 2. In addition to these there were filed photostatic copies of an article entitled "Largest chicken hatchery in the world in Muskogee" (exhibit 8) and of an article entitled "A 60,000 egg incubator" (exhibit 10); there is no indication as to when and where the former was published; the lat-

ter appeared in the issue of November 1912 of "Popular Electricity Magazine."

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A patent bearing number 1,262,860 was issued in the United States on April 16, 1918, to Samuel B. Smith, assignor of the Canadian patent 217,777 to the defendant The Smith Incubator Company; no copy of the American patent was produced, it being admitted that it is word for word the same as the Canadian patent.

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The publications on which the plaintiff relied to prove anticipation and common knowledge are the following:

The Dollar Hen, a book written by Milo Hastings and published in New York in 1909, pages 103 to 107, the chapter entitled "Incubation—The future method of incubation," filed as Exhibit 3;

Poultry Culture, published in Topeka, Kansas, issue of February 1912, pages 7, 14 and 15, containing an article by Ralph H. Searle, associate editor, bearing the title "The Mammoth Incubator out-mammothed" and the sub-title "How Milo Hastings, a Kansas product, is startling the world with his big chick factory" (included in binder exhibit 2);

Technical World, of April 1913, pages 248 and 249, on which appears an article by George F. Paul, intitled "Hatching chickens by wholesale" (included in binder exhibit 2);

Artificial Incubating and Brooding, published by The Reliable Poultry Journal Publishing Company, November 5, 1898, at Quincy, Ill., pages 108, 109 and 110, containing an article under the caption "The origin of the Cyphers incubators" (included in binder exhibit 2);

An article entitled "Humidity in relation to incubation" written by Wm. H. Day, professor in physics, published in the Bulletin of the Ontario Department of Agriculture, Ontario Agricultural College, Guelph, Ont.;

Various articles and photographs dealing with the incubator built by Milo Hastings at Muskogee, Oklahoma, in the fall of 1911 and spring of 1912.

In his article "The Dollar Hen" Milo Hastings foresees the possibility of large hatcheries and describes summarily the plan of a new type of incubator. The description, which is rather indefinite, refers particularly to a process for maintaining an even temperature and for regulating the air moisture in the different parts of the hatching room. Concerning temperatures the description merely says that its "regulation is by means of air heated (or cooled as the case may be) outside of the egg rooms and forced into the egg rooms by a motor driven cone fan, maintaining a steady current of air, the rate of movement of which may be varied at will." Further on, with regard to air moisture, the article says: "The means by which the air moisture is regulated is similar to that used in up-to-date cold storage plants where the air is made moist by sprinkling and dried with deliquescent salts. The regulation of vapor pressure, like that of temperature, may be by electrically moved dampers which switch a greater or less proportion of the incoming current to the sprinkler or dryer as the case may be." It seems obvious to me that, although Hastings had, at the time he wrote his book, realized the necessity of regulating the temperature and the moisture in the incubator, he only had a vague notion of the manner in which this end could be attained. I think that Hastings' book, in so far as common knowledge of the art is concerned, may be disregarded.

The definition of the Hastings incubator contained in the article of Poultry Culture, viz. "The Mammoth Incubator out-mammothed," although somewhat more detailed and accurate than that found in the chapter of The Dollar Hen dealing with incubation, is not definite nor specific enough to permit one skilled in the art to reproduce the incubator in question. Besides the process of air circulation as well

as the method of turning the eggs differ materially from those used in the Smith incubator. I do not think that the article in question can be considered as anticipatory of the patent in suit.

The same remarks apply to the article which appeared in the Technical World of April 1913 under the heading "Hatching chickens by wholesale." As the previous one it refers to a current or draft of air driven by a centrifugal fan through the egg chamber, the purpose of which is to keep it at an even temperature throughout. The article alludes to an improvement by which "compartments holding 10,000 eggs are swung on a pivot and the eggs turned by inverting the entire compartment," but the manner in which this so-called improvement is operated is not clearly disclosed; whether it resembles the method used in the Smith incubator is impossible to say.

* * * * * *

Coming now to the objection based on prior use, I may note forthwith that the evidence adduced in this connection deals exclusively with the alleged prior use of Milo Hastings, commenced in the year 1912.

Hastings was called as witness by plaintiff and in support of his testimony filed as exhibits, in addition to the article on incubation in The Dollar Hen, three plans or drawings of the incubator he built in Muskogee, Oklahoma, in 1912 (exhibit 4) and a photostatic copy of the record of the United States Patent Office relating to his rejected application for a patent for a hatchery for the eggs of domestic fowl filed on May 3, 1911 (exhibit 5). This application was not filed as a publication as it was not published, a rejected application in the United States being treated as a secret document; it was filed to show Hastings' conception of his alleged invention immediately prior to the erection of the Muskogee hatchery in 1912.

It is perhaps not inexpedient to quote the material part of the description included in the specification; it helps to show what Hastings had in mind:

"My invention is that of a hatchery in which I secure better ventilation and a more uniform temperature throughout the hatching chamber by substituting a forced draft for gravity drafts. * * * * * I believe it to be best to cause the air to enter the hatching chamber from above, but my invention is not limited to any particular circulation or movement of the air as, by the use of the fan, the gravity drafts may be overcome and the air caused to move in any desired direction.

Ventilation I secure through cracks around the door of the hatching chamber or other small openings in any part of the air circuit. The air being constantly in motion requires less rejuvenation than dead air.

The part of my incubator that is new, and which has not been used in connection with hatching devices, is that of the fan, and this I maintain to be of distinct utility in securing uniform ventilation and an even temperature throughout all parts of the hatching chamber."

The original claim in the application read thus:

"The combination, in a hatchery for the eggs of domestic fowl, of a chamber for holding eggs to be incubated and a mechanical device with moving parts for causing a circulation of air in or through such chamber."

The claim having been rejected an appeal was lodged before the Board of Examiners-in-Chief; for the purpose of appeal a new claim was substituted in the following terms:

"A hatchery for eggs embodying an incubating chamber adapted for the reception of superposed trays for eggs to be incubated, whereby said eggs will be arranged in layers one above the other, means for affecting a distribution of air uniformly to the eggs

in the chamber, means for heating the air, and mechanically operated means for forcing a uniform circulation of air through all parts of the chamber and past the heater, whereby convexion currents will be eliminated, temperature and gaseous stratification of the air in the chamber overcome, and the eggs subjected to the influence of air of the same temperature and composition."

The decision of the primary examiner was affirmed by the Board of Examiners-in-Chief by a majority of two to one, and the application of Hastings accordingly rejected. The decision of the Board finally disposed of Hastings' application, which was thereafter abandoned.

It may be noted that the dissenting Examiner-in-Chief expressed the opinion that Hastings' claim was patentable.

I must say that the specification contained in the application of Hastings is rather indefinite and that it discloses little, if any, information which was not already known.

I will now turn my attention to Hastings' testimony and indicate succinctly the features thereof which may offer some interest.

Hastings said he became interested in incubation when only a boy through reading an article entitled "How to build an incubator." He built a small incubator and experimented with it. His interest in incubation persisted throughout his course at school, where he spent his spare time in reading all the books, bulletins and other publications dealing with incubation, on which he could lay his hands. Shortly after leaving school he entered the Agricultural College, where, until his graduation in 1906, he was in charge of the poultry work. In 1908 he was employed as a poultry man in the United States Department of Agriculture. Early in that year he was sent to investigate the cold storage industry of eggs and chickens. As a result he became interested in the problem of the control of humidity of eggs in cold storage rooms and he engaged in a scien-

tific study of the measurement and control of humidity and in this connection invented an instrument, patented by the Department of Agriculture, called a cold storage evaporometer.

During his study of the cold storage of eggs he became familiar with certain methods in which, for the equalization of temperature in cold storage rooms, a fan system of air circulation was in use. He read a book relating the story of Cyphers' attempt to build and operate a room hatchery. Witness identified the article "The Origin of the Cyphers Incubator" taken from the work "Artificial Incubating and Brooding" as a copy of an article contained in the book in question, after which he continued his story; I think I ought to quote here the following passage of his deposition (p. 39):

> "Being familiar with these efforts and being conscious of the need for economy of space and improvements in the art of incubation, when working upon the cold storage industry in which a system was in use of fan circulation of air in a chamber to equalize heat and also to control humidity, it occurred to my mind that the essential problem of incubation upon a large scale involved the same series of natural conditions and natural laws, the circulation of air, the equal distribution of heat and control of humidity; and, therefore, that except for the essential difference in temperature between 32 degrees and approximately 100 degrees or a little more, the physical condition or the physical laws that would control them were the same. Therefore, if you could equalize the temperature of eggs when holding them cold, but at a definite temperature with a fan, it occurred to me why not put the fan in and do the same thing for an incubator with the same large room structure and superimposed trays."

For reasons immaterial herein Hastings made no effort to carry on the idea. He completed the work to which he was assigned in the Department of Agriculture, wrote his book "The Dollar Hen" and resigned from the Department, with a view he says, to try to develop his conceived system of large room incubation with the use of a fan.

Hastings then speaks of the incubator he built in the winter months of 1911 for one Walter B. Davis who owned a poultry farm in the suburbs of Brooklyn. As plaintiff is not relying on this particular prior use, nothing would be gained by wasting any time in dealing with this incubator. According to witness, the machine was not advertised.

In the late fall of 1911 we find Hastings in Muskogee, Oklahoma, where, with the financial assistance of a local lawyer and real estate owner of some means, he is erecting a room incubator. Hastings operated this incubator during the hatching season of 1912.

Three plans, marked A, B and C, were filed as Exhibit 4. They are diagrammatic drawings prepared by an artist under the supervision of Hastings a couple of days before the trial.

Plan A shows a floor plan view, plan B a side sectional elevation and plan C an end sectional elevation.

Hastings' incubator consisted of a series of enclosed egg chambers—seven according to plans A and B (indicated thereon by figure 1)—over which was a passage (No. 10 on plan B). The air was impelled by a fan or blower (No. 6 on plans A and B) placed in a separate room (No. 5 on plan A) adjacent at one end to the egg chambers, through a passage (No. 7 on plan A) situate at the rear of the egg chambers, into another passage (No. 8 on plan A) adjoining at the other end the egg chambers and in that passage upwardly through the heating apparatus (No. 9 on plans A and B) into the passage (10) over the egg chambers previously referred to. At the top of the egg chambers were openings leading from this passage (10) to

each of said chambers; at the bottom of the chambers were other openings leading to a passage (No. 12 on plan B) located underneath the chambers; the air thus passed from passage (10) into the egg chambers by the openings aforesaid and then escaped from the egg chambers into the lower passage (12); the air was then returned to the fan or blower and the same movement was repeated indefinitely.

In front of these egg chambers was a room (No. 2 on plan A) into which the chambers opened. Each egg chamber had a panelled door which was not hinged but set up and buttoned and could easily be removed. There were slides or shutters to close the openings from the upper passage (10) into the egg chambers so that the heated air could, if desired, be excluded from any of the chambers.

The proof discloses that Hastings had first installed an exhaust fan to create circulation; it did not give sufficient pressure and it was replaced by a blower (dep. Hastings, pp. 44 and 45). The egg chambers were made to contain large trays, 24 by 48 inches; these trays had screen bottoms with special millwork slides. An egg chamber contained twenty trays, each holding 250 eggs; the capacity of a chamber was accordingly 5000 eggs. Seven chambers gave a total capacity of 35,000 eggs. Owing to the shallowness of the trays it was not convenient for the hatch to come off, so that the plan was to use the space for two trays at hatching periods. Allowing for this the capacity in reality did not exceed 30,000 eggs. The plant in fact was advertised as being of a total capacity of 30,000 eggs (ibid., p. 46).

Hastings said that ventilation was assured by the fact that the heater was a gas flame burning in the bottom of a vertical pipe; to support its combustion it had to draw in and consume a steady stream of air. This gas burner was operating in the closed incubation circuit; this resulted in a steady exchange with outside air; air was drawn out

and had to be replaced; it was replaced by air leakage through cracks in doors or other accidental openings. To obtain further ventilation, if required, the door to the room (5) where the fan or blower was located could be opened.

Speaking of the control of moisture, Hastings stated that his method of adding moisture to the air was to place cans of water in room 5 at the point where the air would be drawn over them when coming out of the passage (12) under the egg chambers (ibid., p. 50).

Asked if he turned the eggs and, if so, how, Hastings replied that they were turned by hand (ibid., p. 51).

No provision was made for the escape of air by valves or otherwise, as there was a steady escape through the heater (ibid., p. 51).

Hastings succeeded in hatching eggs in his incubator at Muskogee, as established by Hastings' own deposition (pp. 51 and 52) and that of Hickox (p. 104) and by the photographs filed as exhibit 7; his success, however, was only fair; financially the undertaking was a failure (dep. Hastings, pp. 52 and 54).

At page 52 of his deposition, Hastings summarizes the hatching record of the Muskogee incubator as follows:

> "The hatching records as a whole for that plant were not high and there were many individual cases of very poor results. I should judge that the hatching record of the whole would run around 40 per cent."

The depositions of L. W. Pitts, L. A. Corry and Richard Shanafelt taken on Commission show extremely poor results for which, however, Hastings may perhaps not be solely responsible.

Speaking of the commercial success of the enterprise, Hastings says (p. 54):

> "It did not meet its operating expenses during the season I was operating it."

The witness ascribed his financial failure to two causes; the low cost at which the hatching was done (one cent per egg) and the incidental expenses of a new venture (p. 54).

The Muskogee hatchery ceased its operations at the end of the hatching season of 1912 and never resumed them.

In the middle of the summer of the same year Hastings went to Port O'Connor, Texas, to build a large incubator for one E. T. Powers; the plant was never completed and was abandoned.

After a careful study of Hastings' experiments, I have reached the conclusion that they do not constitute an anticipation of the patent in suit. His apparatus and process differed from Smith's in many particulars. I may say incidentally, however, that I am inclined to believe that Hastings had conceived something involving novelty and in consequence patentable.

* * * * * *

The United States patent No. 1,262,860, which is identical to the patent in suit, was the subject of a considerable amount of litigation in the United States; it was declared valid in, among others, the following cases: *Buckeye Incubator Co. v. Wolf* (12) affirmed (13); *Buckeye Incubator Co. v. Cooley* (14); *Buckeye Incubator Co. v. Petersime* (15); *Buckeye Incubator Co. v. Blum* (16), affirmed (17); *Buckeye Incubator Co. v. Hillpot* (1), affirmed (2); *Buckeye Incubator Co. v. Miller Hatcheries, Inc.* (3); *Boling v. Buckeye Incubator Co.* (4), reversed on other grounds (5); *Wàxham v. Smith* (6); *Smith v. Snow* (7), reversed on question of infringement (8); *Smith v. Jensma* (9).

---

* * * *

(12) 291 Fed., 253.
(13) 296 Fed., 680.
(14) 17 Fed. (2nd), 453.
(15) 19 Fed. (2nd), 721.
(16) 17 Fed. (2nd), 456.
(17) 27 Fed. (2nd), 333.

(1) 22 Fed. (2nd), 855.
(2) 24 Fed. (2nd), 341.
(3) 41 Fed. (2nd), 619.
(4) 33 Fed. (2nd), 347.
(5) 46 Fed. (2nd), 965.
(6) 70 Fed. (2nd), 457.
(7) 70 Fed. (2nd), 564.
(8) 294 U. S., 1.
(9) 1 Fed. Supp., 999.
(10) 17 Fed. (2nd), 453.

Although I am not bound by these decisions, I have given them due consideration. As observed by counsel, if these decisions do not constitute precedents, they contain very able reasoning by judges learned in the law. The inconvenience, however, is that it is difficult, not to say impossible, in most of these cases to ascertain what evidence was adduced against the validity of the patent. In some of the cases the endeavours and experiments of Hastings were relied upon, wholly or partly, by the party seeking to impeach the patent, as evidence of the state of the prior art; in other cases they seem to have been ignored or disregarded. Again in some of the cases Hastings was examined as witness and in others he did not appear. It would be difficult and somewhat hazardous in the circumstances to found an opinion upon these decisions. Nevertheless the judgment of the Circuit Court of Appeals, Third Circuit (10) which, on the question of the validity of the United States patent, confirmed the judgment of the District Court of New Jersey (unreported), is of some assistance. It appears from the report that the public uses relied on included, among others, Hastings' early work in 1908, Davis' hatchery, Hastings' application for a patent, Hastings' Muskogee hatchery and Hastings' Port O'Connor hatchery. Hastings moreover testified. Woolley, *J.*, who delivered the judgment of the Circuit Court of Appeals, made the following observations:

> "Hastings and Smith, the patentee, no doubt saw the same incubating problems, but Smith pursued a solution directly opposite that of Hastings. He, too, set eggs in trays arranged in tiers and enclosed them in a chamber and he also provided artificially heated air by a motor driven fan positioned at the top of the chamber, but he established an air current and regulated its direction by arranging the tiers of trays in two columns parallel with and separated from each other so as to form between them a central corridor

and placed partitions or curtains from the top to a short distance from the bottom of the tiers and directed the air current downwardly not through the eggs but through the corridor where it mushroomed on the floor, spread beneath the tiers, ascended through the egg trays and escaped through definitely arranged air outlets. By so controlling the current of heated air Smith claims, and we think correctly, that he is enabled to attain uniformity of temperature in its movement, first, through the old heat radiating eggs, and next, as it ascends, to the newer heat absorbing eggs, it being necessary that the temperature of the former should be maintained at a point not higher than 105° and that of the latter at a point not below 100°. Moreover, instead of drawing out trays to turn the eggs and then shoving them back, the trays are tilted in a fashion and to a degree simulating the egg turning movement of the hen. We think this arrangement involves invention. There is not only a marked but an intelligent difference between Smith's conception and the prior art and it is the difference between success and failure, or at least between success and feeble advances. It is not a great invention, yet it is one that solved a problem and it solved it in a new way and with such utility that it has become a commercial success which, measured by the amount of sales made and royalties paid, is really remarkable."

These remarks appear to me right and appropriate.

However it may be, I have, not unhesitatingly I must admit, reached the conclusion, based on the evidence adduced before me, that the patent in suit is valid.

There will be judgment declaring the patent valid and dismissing the action.

The defendants will have their costs against plaintiff.

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FILED
MAY 20 1936
CHARLES ELMORE CROPLEY
CLERK

Supreme Court of the United States

OCTOBER TERM, 1935.

Nos. [redacted] 35 - 36

SAMUEL B. SMITH,

Petitioner,

vs.

A. B. HALL and L. C. HALL, d. b. a. HALL BROTHERS,

Respondents.

SAMUEL B. SMITH,

Petitioner,

vs.

JAMES MANUFACTURING COMPANY and ELMIRA HATCHERIES, INCORPORATED,

Respondents.

REPLY BRIEF FOR PETITIONER.

CHARLES NEAVE,
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Supreme Court of the United States

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vs.

JAMES MANUFACTURING COMPANY and ELMIRA HATCHERIES, INCORPORATED,

Respondents.

REPLY BRIEF FOR PETITIONER.

This reply brief is limited to comment on one point presented in the brief for respondent Hall, and one point presented in the brief for respondent James.

In the Hall brief, on pages 3 and 4, under the caption "Prior Decisions of Other Courts", comment is submitted on the prior suit on the Smith patent in the New Jersey District Court entitled "*Buckeye Incubator Co. and Samuel B. Smith* vs. *William F. Hillpot*" (22 Fed. 2nd 855 and 24 Fed. 2nd 341). The comment concerns particularly the

decree in that suit and the statement is made that the *Hillpot* decree "specifically states" a provision which is quoted and printed in italics.

Investigation at the office of the Clerk of the New Jersey District Court at Trenton, New Jersey, reveals that two decrees were filed in the *Hillpot* case, and photostat copies of both of them are annexed hereto. Each decree is on a single page and the two pages are within a single cover on which is stamped "Filed Sept. 3, 1927".

On the first decree, the provision quoted and printed in italics on page 3 of respondent Hall's brief is stricken out by lines drawn through all of the words of that provision, and in the margin opposite is written the word "Stricken" together with the initials of Judge Bodine and the date February 20, 1928.

The second decree is like the first with the single exception that this stricken provision is omitted, and at the bottom of this second decree there is written "Entered in this form nunc pro tunc Feb. 20, 1928".

Thus, there is no decree on file in the *Hillpot* case containing the provision quoted and printed in italics on page 3 of respondent Hall's brief, and at no time since February 20, 1928, has there been any such decree on file.

The word "mutilation" and the expression "partial obliteration" do not appear to be appropriate to the change which was made in the *Hillpot* decree by drawing lines through the several words of one provision while leaving that provision plainly legible, placing an endorsement in the margin to indicate when and by whom the change was made, signing and filing a second decree with the stricken clause omitted, and retaining the first decree in the files to indicate what was done and when it was done. Moreover, what was done appears to have been done by the official empowered to do it, namely, the District Court Judge.

The copy of the decree of Judge Bodine in the *Hillpot* case referred to on page 3 of respondent's brief is a cer-

tification by the Clerk of the Court of Appeals of the Third Circuit of a copy of the decree as it appears in the *appeal record* in that case. The date written by Judge Bodine in the margin of the original decree opposite the change made by him shows that the change was made after the appeal record was made up; in fact, it was made just after the opinion of the Court of Appeals was rendered.

The allegation of "mutilation" and "partial obliteration" on page 4 of respondent's brief extends also to the opinion of Judge Bodine in the *Hillpot* case. Examination of the opinion on file in the District Court at Trenton, New Jersey, reveals that one change has been made. It consists in drawing lines through the names "Bassini & Heyden" and writing above in longhand the name "Winkler" as the name of the patentee of patent No. 286,756 referred to in the opinion of Judge Bodine as reported on page 857 of 22 Fed. (2d). This is obviously the correction of an inadvertent mistake because the reference to the Bassini & Heyden patent of a different number appears in the third sentence following.

In the brief for respondent James, the prolonged litigation of the Grant tire patent is cited on pages 2 and 3 as a precedent for the denial of certiorari here. It is, in fact, a *precedent for the grant* of certiorari. In the Grant tire litigation, petitions for certiorari were presented on three different occasions when there was no conflict between decisions of Courts of Appeals on the same issue, and all three applications were denied, as is correctly stated by respondent James on pages 2 and 3 of its brief where the cases are cited and grouped. On one other occasion, there was conflict between decisions of Courts of Appeals on the same issue and certiorari was granted. This Court's opinion in that case appears at 220 U. S. 428.

Respondent James urges that certiorari should not be granted because the conflicting decisions of Courts of Ap-

peals were based on different records. The Grant tire litigation is a precedent against respondent on this point. The conflicting decisions of Courts of Appeals which led to the grant of certiorari in the Grant tire litigation were based on different records. That is made plain in the opinion of this Court (220 U. S. 428), particularly in the portions of the opinion quoted by respondent James on page 5 of its brief.

In applying for certiorari, we stated that there is no difference *of substance* between the records on which the conflicting decisions of Courts of Appeals were based. Respondent James says that there is a difference of substance. In anticipation of that contention, we pointed out in the brief accompanying the petition what are the differences between the several records to thus provide the facts from which one may determine whether or not the differences are of substance or merely of quantity. Such determination is unnecessary, however. It is sufficient that two or more Courts of Appeals have decided the same issue differently, and as to that there is no disagreement. All agree that Courts of Appeals have rendered diametrically opposed decisions as to whether or not the Hastings prior use and publications invalidate the Smith patent. That is the condition which makes the grant of certiorari appropriate, and differences in the records of the cases in which those conflicting decisions were rendered are irrelevant on the issue of whether or not the writ should be granted, as appears to have been recognized by this Court in the Grant tire case.

Respectfully submitted,

CHARLES NEAVE,
DEAN S. EDMONDS,
ALBERT L. ELY.

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF NEW JERSEY.

THE BUCKEYE INCUBATOR COMPANY and SAMUEL B. SMITH,

Plaintiffs,

vs. : In Equity No. 2026.

WILLIAM F. WILLPOT,

Defendant.

FINAL DECREE.

This cause came on to be further heard at the April Term of this Court, upon the pleadings and proofs, and was argued by counsel for the respective parties, and thereupon, upon consideration thereof, it was

ORDERED, ADJUDGED and DECREED, First, that defendant has not infringed plaintiff Smith's Patent No. 1,262,860. Second, ~~that said patent does not disclose a successful method of operation and, consequently, method claims 1 and 2 thereof are invalid and void.~~ Third, that the Bill of Complaint be dismissed. Fourth, that plaintiffs have not infringed defendant's claim 8 of Willpot Patent No. 1,489,597. Fifth, that plaintiffs have not infringed defendant's claims 1 or 2 of Willpot Patent No. 1,545,425. Sixth, that defendant's Counterclaim be dismissed. Seventh, that the parties shall pay their respective costs.

J. C. Bradford
U. S. D. J.

Approved as to form:

Counsel for plaintiffs.

Solicitor for Defendant.

60

UNITED STATES DISTRICT COURT
DISTRICT OF NEW JERSEY

THE BUCKEYE INCUBATOR COMPANY and SAMUEL B. SMITH, Plaintiffs	:	Equity 2026
v	:	FINAL DECREE
WILLIAM F. HILLPOT, Defendant.	:	

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J. C. Bodine
Judge

Approved as to form:

Counsel for plaintiffs.

Counsel for defendant

Entered in this form nunc pro tunc
Feby 20th 1928

UNITED STATES DISTRICT COURT

DISTRICT OF NEW JERSEY.

In Equity No. 2026.

The Buckeye Incubator Company and Samuel B. Smith,

Plaintiffs,

vs.

William F. Hillpot.

Defendant.

FILED

SEP 3 1927

AT 9 O'CLOCK A. M

GEORGE T. CRANMER, Clerk.

FINAL DECREE.

ARTHUR E. PAIGE
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FILE COPY

SEP 28 19

CHARLES ELMORE C
CL

Supreme Court of the United States

OCTOBER TERM, 1936.

Nos. 35 and 36.

SAMUEL B. SMITH,

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BRIEF FOR PETITIONER.

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IN THE

Supreme Court of the United States

OCTOBER TERM, 1936.

Nos. 35 and 36.

SAMUEL B. SMITH,

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SAMUEL B. SMITH,

Petitioner,

vs.

JAMES MANUFACTURING COMPANY and ELMIRA HATCHERIES, INCORPORATED,

Respondents.

BRIEF ON BEHALF OF PETITIONER.

The Opinions Below.

The opinions of the Circuit Court of Appeals for the Second Circuit (83 F. [2d] 217, 221), both rendered upon the same day, held invalid U. S. Letters Patent No. 1,262,860

(claim 1 in the *Hall* case and claims 1, 2, 3 and 5 in the *James* case), granted April 16, 1918, to Samuel B. Smith, reversing decisions of two District Courts which had held the patent valid and infringed (Hall R. p. 211; James R. II p. 1259).

Jurisdiction.

These cases are here on writs of certiorari under the provisions of Title 28, Section 347, of the United States Code.

Statement of the Case.

These two cases went to the Circuit Court of Appeals upon two different records, they were argued on the same day, and the Court of Appeals treated the cases as though the two records constituted a joint record applicable to both cases. We are, therefore, presenting the cases jointly.

The Prior Suits.

The Smith patent, here in suit, was held valid and infringed by this Court in two cases entitled *Smith* v. *Snow* and *Waxham* v. *Smith* (294 U. S. 1 and 20). The decisions of this Court in those two cases were rendered January 7, 1935. The decisions of the Court of Appeals for the Second Circuit in the instant cases were rendered more than a year later, and the patent was held invalid because of asserted prior invention, use and disclosure by a man named Milo Hastings. That defense was not presented in the *Snow* and *Waxham* cases decided by this Court (it was pleaded in the *Snow* case,* but no proofs were presented). It had been unsuccessfully presented in various prior suits.

In the *Snow* and *Waxham* cases, this Court was concerned primarily with the scope of the protection secured

**Snow* Record page 8.

by the Smith patent under its claim 1, which claim is involved in both of the instant cases. But in determining the scope of that claim, this Court examined and commented upon the evolution of the modern method of and apparatus for incubating chicken eggs as shown by the testimony and the prior patents, and held the Smith patent to be valid and of far-reaching scope. Thus, this Court said in the *Snow* case:

> "This history of the prior art serves to emphasize rather than to discredit the striking advance made by Smith in effecting the combination defined in Claim 1. More than the skill of the art was involved in combining and adjusting its elements in such fashion as to solve the major problems of artificial incubation" (294 U. S. 17).

And, as presenting the revolutionary character of the Smith invention, this Court said:

> "The commercial success of the new method was immediate and striking. At first the inventor devoted himself to developing his own hatchery for the use of the new method; it was the largest in existence, with a capacity of over 1,000,000 eggs. In 1922 he began the manufacture and sale of the new incubator. In ten years he, and a corporation which he had organized for the purpose, had made sales of incubators aggregating about $24,000,000, having a total egg capacity of over 188,000,000. The old type of incubator, with eggs arranged at a single level, all in a single stage of incubation, has thus become obsolete" (294 U. S. 7).

The patent has been the subject of continuous litigation extending over the past fifteen years. It has been reviewed by this Court, by five Courts of Appeals, by fifteen District Courts, and by two Masters appointed by District Courts, and a corresponding Canadian patent has

been passed upon by a Court of Canada. In all of these numerous cases prior to the instant ones, the patent was held valid*, as was noted by this Court in its opinion in the *Snow* case (294 U. S. 1), and in the cases at bar the patent was held valid by both District Courts.

The Hastings defense has been known since the beginning of the litigation of the Smith patent.

In the first case, *Buckeye, et al.*, v. *Wolf*, the history of Hastings' futile effort, including the complete Hastings file wrapper and many of the Hastings publications, was reviewed by Judge Westenhaver in the District Court for the Northern District of Ohio, and his conclusion was that Hastings had not contributed anything of value to the solution of the problem of mass incubation (291 Fed. 253, 258). This decision of Judge Westenhaver in the *Wolf* case was affirmed by the Court of Appeals for the Sixth Circuit, without specific discussion of the Hastings defense (296 Fed. 680).

In the next case, *Buckeye, et al.*, v. *Cooley*, in the New Jersey District Court, the Hastings defense was more completely exploited. Hastings testified as to his prior efforts, the Hastings abandoned application complete was again presented, and an additional publication was offered. The case was tried before Judge Bodine and the Hastings defense was again rejected. The Court's opinion has not appeared in printed records but it is reproduced in a separate pamphlet constituting an appendix filed with this brief. Judge Bodine's ruling was affirmed by the Circuit Court of Appeals for the Third Circuit, whose opinion is reported in 17 F. (2d), at page 453, the discussion of the Hastings defense being on pages 454 and 455.

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*If respondent, Hall, refers to the second paragraph of the decree in the *Hillpot* case (Hall R. p. 209), we direct the attention of the Court to pages 2 and 3 of our reply brief on petition for certiorari in the Hall case.

The third suit, *Buckeye, et al.*, v. *Stone*, was in the District Court for the State of Oregon and there again the Hastings defense was urged. The case was referred to a Master, Mr. Maguire, and he also rejected the Hastings defense. His opinion is not reported but it is reproduced in the appendix. There was no review of the Master's report by the District Court or the Court of Appeals.*

In the following years and up to the decisions of this Court in the *Snow* and *Waxham* cases, no one of the defendants in suits based on the Smith patent saw fit to urge the Hastings defense.

Since the decisions of this Court in the *Snow* and *Waxham* cases putting an end to numerous other defenses against the validity of the Smith patent, various other defendants have urged the Hastings defense.

In *Smith* v. *Street*, in a District Court of Minnesota, tried before Judge Molyneaux, Hastings testified at the trial (Hall R. p. 54) and the records of all previous litigations were presented, and again the Hastings defense was rejected (Hall R. p. 183).

In *Smith* v. *Sims* in the Indiana District Court, tried before Judge Baltzell, the record of the present *James* case was presented (Hall R. p. 54; James R. p. 1106) and again the Smith patent was held valid and infringed (Hall R. p. 171).

Lastly, Hastings and the Hastings publications appeared in a suit brought in Canada to invalidate the corresponding Canadian Smith patent and the Exchequer Court held the patent valid. The Court's opinion (1936 Ex. C. R. p. 105) deals with many issues; those portions dealing with the Hastings defense are the only ones of importance here and they are reproduced in the appendix.

The present *Hall* case was tried before Judge Hincks in the Connecticut District Court. Hastings and two cor-

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*The unreported decisions in the *Cooley* and *Stone* cases are contained in Plaintiff's Exhibit 2 in the *Hall* case (Hall R. p. 43).

roborating witnesses testified at the trial and the Hastings publications and abandoned patent application were presented. In this case the Hastings testimony dealt primarily with the Davis incubator at Brooklyn. Judge Hincks also rejected the Hastings defense, commenting on the "dearth of evidence" in support of the defense and the absence of any successful achievement as a result of Hastings' effort.

The present *James* case was decided by Judge Knight in the District Court for the Northern District of New York at Buffalo. The testimony in support of the Hastings defense in this case was taken by deposition and includes a deposition of Hastings. No attempt was made to support the testimony of Hastings as to the Davis incubator in Brooklyn; instead, the testimony related practically entirely to Hastings' second effort at Muskogee, Oklahoma. Here again, the Hastings defense was rejected and the Smith patent sustained and held to have been infringed. No discussion of the Hastings defense appears in the Court's opinion but the rejection of it is covered by the findings of fact (James R. p. 1266).

Thus, the Court of Appeals for the Second Circuit, in sustaining the Hastings defense, ruled oppositely to the Court of Appeals for the Sixth Circuit in the *Wolf* case and the Court of Appeals for the Third Circuit in the *Cooley* case, and oppositely to the decisions of the District Courts in the instant cases and the several other District Courts we have noted in the foregoing. Three of the District Court Judges who rejected the Hastings defense had had the marked advantage of observing Hastings and listening to his testimony at the trials before them in the *Hall*, *Cooley* and *Street* cases. Such personal contact of Judge Bodine with Hastings in the *Cooley* case led to the following comment (App. p. viii):

> "Hastings' testimony adds only this to the Hastings' writings, that one is satisfied that his experiments were

never in any definite direction and that he never achieved the point of successful operation. * * * Hastings was and is boastful. Convincing proof of his alleged method and device is certainly lacking. Success never rewarded his attempts."

The Smith Invention.

We do not here detail the facts in connection with the character and accomplishment of the Smith invention. The petitioner's proofs on these points in the instant cases are the same in substance as those presented to this Court in the *Snow* and *Waxham* cases.

The facts are set forth in the decisions of this Court in those cases (294 U. S. 1 and 20).

Brief History of Hastings.

Details of the facts in relation to the Hastings defense can best be presented in the course of the argument (p. 16-73, *infra*). We shall, here, merely outline the situation.

Hastings first appeared in 1908 as an employee of the Poultry Division of the Department of Agriculture. While there he became acquainted with a certain method and apparatus developed by one Madison Cooper for the preservation and cold storage of vegetables. The idea occurred to him that incubation of eggs could be successfully carried on by the use of the same principles which had proved successful in cold storage. He elaborated this idea in a book published in 1909 entitled "The Dollar Hen". After the publication of this book, he resigned from the Government employ to put his idea into practice.

His first attempt was at Brooklyn, New York, at a poultry farm operated by one Davis who furnished the necessary funds. There, in the spring of 1911, Hastings built an incubator following Cooper's ideas and tried it out in the cellar of the Davis house. This was an incubator of 6,000-

egg capacity, but in actual test it never contained more than 2,000 eggs.

On May 3, 1911, and while still at Brooklyn, Hastings filed an application for patent which shows nothing more than Cooper's cold storage plant applied to the hatching of eggs. The application as filed did not disclose the principles of the Smith invention, and, had it issued as a patent, would not have anticipated Smith. After a prosecution extending over a period of two years, the application was rejected by the Patent Office and abandoned.

The Brooklyn (Davis) incubator was operated during the months of March and April, 1911. The Court of Appeals for the Second Circuit said that this incubator was successfully operated during the years 1910 and 1911. This was an error for the testimony shows that the incubator was not built until the spring of 1911 and was operated only during a short period in the hatching season of that year (James R. p. 506; Hall R. p. 52). There is no testimony in either record how or to what extent the incubator was used after Hastings departure. There is no evidence that any eggs were set therein after April, 1911. The only testimony basis for a finding of successful operation is the oral testimony of Hastings (Hall R. p. 52). There is no corroboration of his testimony by witnesses who were connected with this enterprise. Neither Davis nor his wife testified that the operations were successful; in fact they were in no position to give any such testimony. Neither of them followed the operations sufficiently to permit of giving such testimony. Mrs. Davis gave hearsay testimony that comparative tests were made with the old style incubators (Hall R. p. 62). But no one except Hastings testified as to results secured and no further evidence of the tests was produced. The finding of the Court of Appeals that "there is uncontradicted testimony that this Davis hatchery was an operative success" (Hall R. p. 242) is inexplicable.

Some eggs may have been hatched, but unless the incubator actually secured a percentage of hatch comparable with or superior to the old prior art incubators it cannot be said that the results were successful, and as to the actual results secured there is no proof in the record. Furthermore, at no time during its operation was the incubator loaded to more than one-third of its operative capacity (Hall R. p. 55); nor was the Brooklyn incubator a "Public Use" as the operations were carefully guarded from the public.

Hastings left Brooklyn in May, 1911, and in 1913 the incubator was torn down and completely destroyed (Hall R. p. 60).

In the fall of 1911, Hastings appeared at Muskogee, Oklahoma, where, with the financial backing of one Lieber, he built another type of incubator. The Court of Appeals for the Second Circuit found that this Muskogee incubator embodied the same construction as the Brooklyn incubator. This is not true for, in the Muskogee incubator, Hastings operated upon an entirely different principle from that embodied in the Brooklyn incubator. In the spring of 1912, Hastings started operations at Muskogee and carried them on through that hatching season, making a number of changes and revisions in the construction as the season progressed. In May, 1912, he fled Muskogee, leaving the incubator on the hands of his supporters and no more eggs were set therein that year.

In 1913, Hastings' backers put some more money in the enterprise and set one batch of eggs, but, when this one batch was a failure, they abandoned the incubator and it was never operated again (James R. p. 785). In the fall of 1913, this incubator was destroyed and no trace of it remains (James R. p. 607).

The operations in Muskogee were a complete financial and practical loss. Many customers testified to disappointing results and in some cases to complete failure to hatch

eggs. During the year 1912, some eggs may have been hatched but no records were produced to show the amounts or percentages. Hastings and Lieber both testified that the results were variable and it is quite apparent that the average was so poor that continued operation of the incubator was impractical.

The Court of Appeals for the Second Circuit found that this Muskogee incubator ran through the hatching seasons of 1912 and 1913. Undoubtedly it was attempted to operate it as a commercial enterprise during the hatching season of 1912, but the unsuccessful attempt to hatch one setting of eggs in 1913 hardly warrants the finding made by the court.

From Muskogee Hastings went to Petaluma, California, at which poultry center he received no support, and later he appeared at a new poultry center at Port O'Connor, Texas, where, in the fall of 1912, he secured additional funds and built another incubator of a still different type and with a capacity of 150,000 eggs. This incubator was operated for a single setting only of 720 eggs and was then abandoned by Hastings (James R. p. 573).

Hastings then sought the support of the Hall Incubator Company, an established concern engaged in the manufacture of the old still-air type incubator. After a brief sojourn with this concern, he discontinued all further effort until 1918 (James R. p. 575-576).

In 1918, after Smith had been commercially operating his successful hatchery in Cleveland, Hastings visited Smith and then went on to Tiffin, Ohio, where he built another incubator and of that he said, "I tried out a method of hatching very much more like the Smith Buckeye devices than I had used in the past" (James R. p. 577). This Tiffin incubator was also a failure and was abandoned by Hastings.

Nothing further was heard of Hastings until the litigation of the Smith patent brought him into the Courts.

During the period covered by these years, Hastings attempted to publicize himself and his efforts in newspapers and periodicals, holding himself out as the successful inventor of modern mass incubation. There was a total absence of practical achievement resulting from his efforts.

The Errors Assigned and To Be Argued.

The errors assigned in the petition for writ of certiorari and to be argued here are:

1. The Court of Appeals for the Second Circuit erred in holding that the Hastings defense was effective to render the Smith patent invalid as to claim 1 in both cases and as to claims 2, 3 and 5 in the *James* case.

2. The Court of Appeals for the Second Circuit erred in ordering reversal of the decrees of the District Courts.

Each of the respondents presented other defenses, primarily that of non-infringement, based upon reasons which must be rejected by this Court in conformity with the holdings of this Court in the *Snow* and *Waxham* cases. Brief discussion of those issues is included herein, but in the main this brief is confined to the Hastings defense.

Summary of Argument.

Petitioner's proofs in the instant cases are the same in substance as those presented to this Court in the *Snow* and *Waxham* cases. The very substantial revolution in the art of incubation was traced directly to the Smith invention and it was shown that the principles of that invention were new in the art and have been followed by the respondents.

The remarkable development in this art is not traceable to the prior efforts of Hastings; on the contrary, when Hastings, in the fall of 1912, abandoned his third attempt to solve the problem of mass incubation, nothing had been accomplished and no one ever tried to duplicate his efforts. The art persisted in the use of the old, still-air incubators with the eggs in a single layer in one stage of incubation. Beginning with Smith's achievement of the solution in the year 1915, the revolution was continuous and overwhelming.

The events of the Hastings defense occurred more than twenty years before the witnesses testified in the instant cases. Their testimony about the construction and method of operation of the Hastings incubators and the results obtained in the operations is meagre and uncertain. It includes many admissions of total lack of knowledge of the results obtained and also many material departures from testimony given by the same witnesses in former litigations. No records of results obtained were produced, and there is no contemporaneous evidence, which is at all specific, dealing with either the constructions employed or the methods of operation.

Hastings was afforded every facility for making practical use of any novel ideas he evolved on the subject of incubation in connection with each of the three incubators he built and operated prior to the Smith invention. There is no suggestion of lack of funds or hampering of his efforts by others. Yet it is a fact that each of his three incubators was operated for a short time in one hatching season *only*, use of each of them was then discontinued, and each was then destroyed.

Though the construction of the three Hastings incubators is not proven with any accuracy, it is clear that each differed markedly from its predecessors. There appears to have been no consistency to Hastings' efforts, but instead a vacillation which is indicative of groping for something satisfactory without ever reaching it.

The various publications relied upon by respondents are statements and claims made by or for Hastings for success which was never realized. They contain no adequate description of the Smith invention and fail to describe with sufficient clarity the construction of the several Hastings incubators or how he attempted to conduct mass incubation in them.

Hastings filed an application for patent contemporaneous with his first attempt to build a successful incubator, but this application lacks two essentials of the Smith invention—staged incubation and current movement of air in sufficient volume and velocity to equalize the temperature throughout the mass of eggs in staged incubation. On the former point, the application is wholly silent. On the second point, the structure illustrated and described would effectively choke any effective current movement of air through the eggs. The application was rejected by the Patent Office and abandoned. No claim commensurate with Smith's Claim 1 was ever made during the prosecution of the application, and none could have been made for the application afforded no basis for such a claim.

In amendments filed toward the close of the prosecution of the application, reference is made to the differing thermal characteristics of eggs in different stages of incubation, a fact which Hastings apparently grew to appreciate from his experiences while the application was pending. He traced the difficulties which he was encountering to the behavior of the eggs, but the disclosure of the abandoned application and of the documents filed with it is devoid of any adequate suggestion as to how these difficulties might be overcome.

These facts mark the whole of Hastings' effort with the brand of failure. As stated by the Court of Appeals for the Third Circuit in the *Cooley* case (p. 455):

> "The result was negative, and, judging from what happened to the hatcheries, it was not successful."

The decisions of those Courts which disposed of the Hastings defense at the threshold of this protracted litigation are sound and follow the well-established principles laid down by this Court in many leading cases dealing with defenses of prior use and prior invention. Prominent among such cases are the *Barbed Wire Patent Case* (143 U. S. 275) and *Coffin v. Ogden* (18 Wall. 120).

In the *Barbed Wire Patent Case* this Court said at page 284:

> "We have now to deal with certain unpatented devices, claimed to be complete anticipations of this patent, the existence and use of which are proven only by oral testimony. In view of the unsatisfactory character of such testimony, arising from the forgetfulness of witnesses, their liability to mistakes, their proneness to recollect things as the party calling them would have them recollect them, aside from the temptation to actual perjury, courts have not only imposed upon defendants the burden of proving such devices, but have required that the proof shall be clear, satisfactory and beyond a reasonable doubt."

In *Coffin* v. *Ogden*, 18 Wall. 120, 124, the Court said:

> **"The invention or discovery relied upon as a defence, must have been complete, and capable of producing the result sought to be accomplished; and this must be shown by the defendant. The burden of proof rests upon him, and every reasonable doubt should be resolved against him. If the thing were embryotic or inchoate; if it rested in speculation or experiment; if the process pursued for its development had failed to reach the point of consummation, it cannot avail to defeat a patent founded upon a discovery or invention which was completed, while in the other case there was only progress, however near that progress may have approximated to the end in view. The law requires not conjecture, but certainty."**

ARGUMENT.

POINT I.

The Smith invention consists of a plurality of elements, all of which must be present.

The nature of the Smith invention and the essentials of successful mass incubation, first perfected by Smith, are fully and accurately presented in the opinion of this Court in the *Snow* case (294 U. S. 8). Those essentials are:

(1) The eggs must be set in *staged incubation* which is defined as the successive setting of eggs within the cabinet at brief intervals. In order to secure the benefits of the invention, intelligent use must be made of staged incubation so as to secure an approximate balance between the endothermic and exothermic eggs. A mere hit and miss setting of eggs of varying ages will not suffice, for if only a small percentage of the eggs is in one stage and the great mass in another, obviously the preponderance of cold, or hot, eggs will destroy the necessary balance which should be maintained.

(2) The eggs in staged incubation *must be set in one room* in order for the heat interchange to function, and this room must have the "restricted openings" which supply the requisite fresh air and permit escape of foul air without excessive loss of moisture, which would result in drying the eggs too rapidly.

(3) The air must be circulated *about all of the eggs* in this single room with sufficient force to constitute a definite current as distinguished from such drafts as may be generated by the differing heat conditions at different points within the room; and

(4) The current of air must move with a *sufficiently high velocity* to maintain the air at the *same temperature* about all of the eggs, thus breaking down any tendency for the formation of hot or cold spots about any group of eggs. As stated by this Court, this latter step marks "the boundaries of the claim". Smith mounted his fans directly within the chamber and vigorously recirculated substantially the same body of air over and over again through the eggs so that the temperature of the air was the same at all points, and all of the eggs, whether new or old, were subjected to the same air temperature.

As shown by the records in the *Snow* and *Waxham* cases, the solution of this problem was the result of persistent and untiring efforts extending over a period of over nine years (Snow R. p. 134; Waxham R. p. 545; 561). Repeated disappointments and failures dogged Smith's efforts, and it was only in the year 1915 that he finally combined all the elements of Claim 1. When the combination was made, success immediately followed.

POINT II.

In none of his efforts did Hastings combine the essential elements of the Smith invention.

The Hastings Defense in General.

The Hastings defense is typical of the class of defenses so frequently found in patent litigations where the successful inventor who creates a new art and achieves a large measure of material success, is confronted with earlier failures in the field. The answer is usually found in comparative results secured. In such cases the true inventor is immediately rewarded with striking success, and the art adopts and uses his invention from the day it first appears. On the other hand, the efforts of the earlier worker lead

nowhere and nothing is heard of him until he is brought forward in an effort to depreciate the achievement of the true inventor. As was said by this Court in *The Barbed Wire Patent Case* (p. 284), *supra*, "almost every important patent, from the cotton gin of Whitney to the one under consideration, has been attacked by the testimony of witnesses who imagined they had made similar discoveries long before the patentee." The Smith patent is no exception to this rule.

Undoubtedly Hastings *tried* to solve the problem of mass incubation. As we shall show in detail in a moment, he made three separate attempts at three different places, but none of his efforts lasted through more than one season. After each attempt he moved to another location, getting new capital to finance his efforts. Each incubator which he built differed in a wide measure from the preceding; and each incubator was soon destroyed. Neither Hastings, nor any one else connected with him, made a penny from his work, each lost all he had put into it, and none of Hastings' incubators was ever duplicated or reproduced by him or his associates or anyone else. His last attempt was in the fall of 1912. Nothing more was done by him until after Smith had made the invention and knowledge of it reached the world. Then, in 1918, Hastings made an attempt to build a practical incubator, following Smith's teachings. Even this was a failure, and Hastings passed out of the field until his efforts were resurrected by successive defendants, none of whom succeeded in injecting life into the defense until the Court of Appeals for the Second Circuit, after the expiration of the Smith patent, decided in favor of Hastings.

Considered from the standpoint of practical results attained, it appears to be particularly plain that Hastings failed to grasp the essentials of the Smith invention and failed to bring together those essentials in any one of the three efforts he made prior to the Smith invention. Had

Hastings, in fact, made the invention, commercial success would have been inevitable, just as it was with Smith. Hastings had every opportunity for success, but he failed completely. Hastings had no difficulty in securing financial backing for each of his efforts, he was enabled to try out his ideas unhampered by his associates, he spread news of his attempts over the pages of numerous technical and popular publications, and he was given every encouragement from those directly interested in the poultry business. After all of this, in 1912, Hastings gave up the problem. But ever after he has envied the success which came to Smith, and it is evident that his testimony has been colored by that feeling. As he testified in the *James* case (R. p. 579) he felt

> "some element of resentment that he did not share in such returns."

We shall now discuss the several publications and the installations made by Hastings in his attempt to solve the problem of mass incubation, pointing out wherein each publication fails to disclose the Smith invention and wherein each incubator failed to attain the goal of successful achievement.

"The Dollar Hen".

In the year 1908 Hastings, then about 24 years of age and an "expert" in the poultry division of the United States Department of Agriculture, encountered Madison Cooper, a refrigerating and ventilating engineer, who had designed a refrigerating apparatus for the preservation of vegetables, consisting of a cold storage room with perforated diaphragms above and below and a fan outside to cause a slow circulation of air through the room. Hastings conceived that this scheme might be used for an incubator. As he says (James R. p. 540) "I adapted that idea to in-

cubation." Hastings had no conception that the art of incubation, dealing with animate heat generating organisms, differed in any way or presented any problem distinct from that which confronted a cold storage engineer in the preservation of inanimate perishables.

Conceiving that incubation presented no difficulties not solvable by the application of refrigeration principles, Hastings wrote "The Dollar Hen". This is the publication to which the Circuit Court of Appeals referred at considerable length, quoting therefrom a selected passage (Hall R. p. 238). Either the Court did not read the whole of the book, or else it failed to understand the significance of other passages. Hastings said in this publication:

> "The plan of the hatchery is on that of a cold storage plant as far as insulation and general construction go" (p. 104);

and:

> "The means by which the air moisture is regulated is similar to that used in up-to-date cold storage plants where the air is made moist by sprinkling and dried with deliquescent salts" (p. 105).

It all seemed very simple to Hastings.

> "So simple is this that the reader will doubtless wonder why it was not developed earlier" (p. 104).

Hastings testified (James R. p. 540):

> "It occurred to me, while considering this method of refrigeration, that the problems of refrigeration and the problems of incubation were very similar, in fact we might say identical, and I believe I so wrote in 'The Dollar Hen'. I did so testify in the Cooley case."

And at page 541:

> "The statement of my opinion, as expressed in 'The Dollar Hen', was that the adaptation of the forced draft fan system of equalizing temperature, used by Cooper in cold storage, would apply to incubation. I was under the impression that the application of the device and method to incubation constituted an invention."

The publication fails to give any adequate description either of the incubator structure or of a method of operation. It was written by Hastings before he made an attempt to carry out the process. Judge Westenhaver correctly appraised this publication when he said in the *Wolf* case (291 F. 253-257):

> "The earliest article in the 'Dollar Hen' may be disregarded, as Hastings there merely describes a process for maintaining temperature in cold storage and suggests how it may be applied in a hatchery. It does not purport to describe an apparatus or ever to have been put to any use."

That Judge Westenhaver was correct is admitted by Hastings (James R. p. 540).

The reasons why the vague ideas expressed in "The Dollar Hen" do not anticipate the Smith invention are apparent. They constituted nothing more than the use of principles of cold storage in incubation. Hastings did not appreciate or understand the value of setting the eggs in staged incubation and he gave no definite instructions as to the manner in which they should be set. The ordered and intelligent utilization of the endothermic and exothermic properties of a large mass of eggs, set with some regard for their progression in incubation, was wholly a closed book to Hastings. Nor did Hastings conceive of the Smith method of conserving moisture by the restricted outlets; on the contrary, he proposed to adopt the systems used by cold-storage opera-

tors. Nor did Hastings understand the necessity for a circulation of air any more vigorous than might be required in Cooper's cold storage plant, a fact which is made clear when we consider the patent application which he filed during the period when he was attempting to make use of the conception. If a perforated partition such as that used by Cooper (James R. p. 554), or its equivalent, a fabric, is placed between the fan and the egg chamber, the force of the circulation will be retarded to such an extent as to destroy current movement of the air (*infra*, p. 25, 26). Lawry, another alleged prior user who appeared in earlier cases, also attempted to adapt Cooper's cold storage system to mass incubation (Waxham R. p. 457) and failed, as is shown by the discussion of the Lawry prior use by the Circuit Court of Appeals for the Ninth Circuit in the *Waxham* case at 70 F. (2d) 457, 459. As the Court said:

> "'Lawry did provide for a large chamber of heated air in which the eggs were placed. He did provide small vents above and below this chamber through which the air entered and escaped from the incubating chamber. The air in the Lawry process was given some momentum by an electric fan, but the effect of this momentum was almost entirely dissipated by the fact that the current of air was forced through a large number of small openings and escaped through similar openings to return through narrow passages to the fan to be again circulated through the incubation chamber. The obvious purpose of Lawry in this method of incubation was to supply fresh air without agitating the contents of the incubating chamber any more than was necessary to supply the fresh air. Apparently there was no effort to remove the heat from the incubating eggs by a current of high velocity. The plan was a failure and was abandoned and need not be further considered. We conclude that the Smith patent is valid."

Ten years later, after the Smith invention and after Hastings' experiences at Tiffin, Ohio, Hastings characterized this "Dollar Hen" publication as "an impractical poultry book" (James R. p. 578-579).

The Davis (Brooklyn) Incubator.

Principles of the Smith Invention Not Embodied In It.

Still believing that mass incubation was a very simple transposition of the cold storage system to the art of incubation, Hastings resigned from the Department of Agriculture in 1910 and sought an opportunity to apply this refrigeration idea to incubation. He set forth from the shores of theory on the troubled waters of practice armed with all of the self-assurance of a young "government expert". He first disclosed his ideas to Francis Orvis, the editor of "The Poultry Digest", who was not called as a witness by the defense in either case, and whose absence was not explained (Hall R. p. 54). Orvis introduced him to Davis, a printer engaged in operating a large linotype establishment in New York City, who also ran, as a side line, a poultry farm on the outskirts of Brooklyn, N. Y., in connection with which he operated a road-house selling chicken dinners. Davis was busy day and night operating his printing establishment and gave little attention to his poultry farm (Hall R. p. 59-60). The farm was run by a man named Miller, and a helper (Hall R. p. 62; James R. p. 505), to whom Hastings disclosed the operation of the incubator (James R. p. 546). Neither Miller nor the helper was called as a witness by respondents, nor was their absence accounted for. The present Mrs. Davis was then a

bookkeeper for Davis and went out to the poultry farm only occasionally (Hall R. p. 63).

Davis gave Hastings a salary and turned him loose in the Brooklyn hatchery to make what he could of his ideas in comparison with some old Cyphers incubators which he had at the place. Hastings built an incubator and tried it out in the spring of 1911. The patent application is the only contemporaneous record which shows the construction of the incubator. There are no records produced of the results of any experiments and no records of any hatch or of the number of eggs put into the incubator and the number of chicks produced. There is only the testimony of Hastings as to whether there were any successful hatches and as to what was the method of operation of the incubator.

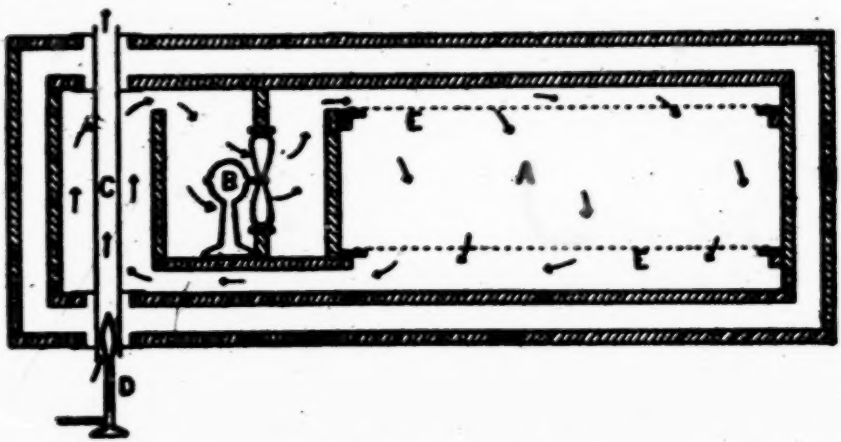
Just before Hastings testified in the *Cooley* case, he made some drawings purporting to show the Davis hatchery. As Judge Bodine said (Appendix, p. vii):

> "The drawings made on the eve of the present suit are, at best, Hastings' recollection of what he now fancies he did in 1911. It seems impossible that the methods disclosed in his drawings should not bear a resemblance to Smith's successful incubator rather than his failures."

In the *James* case, new drawings of the Davis incubator were made on the eve of the testimony in that case, and these drawings show differences in the fan arrangement from the *Cooley* drawings and a closer approach to the Smith principle (Hall R. p. 542-543).

The application for patent, prepared by Hastings (Hall R. p. 57) and executed April 20, 1911, contemporaneously with the operations at Brooklyn, contains a drawing of the incubator and some indication of what were Hastings' ideas at that time on the subject of incubator operation.

The application is at pages 727 to 764 of the James Record, and the drawing appears on page 764. It is reproduced below.



This drawing made by Hastings and incorporated by him in his patent application was made at about the time when he completed the Davis or Brooklyn incubator. Therefore it seems only reasonable to assume that it represents what Hastings then had in mind as the best embodiment of his ideas about incubator construction and the construction he employed in building the Davis incubator. But the construction illustrated by it is very different from that shown by the *Cooley* and *James* drawings made by Hastings from memory more than twenty years later.

In view of the fact that Hastings' conception was the mere transposition of Cooper's cold storage process to incubation, it is not surprising to find that his application shows an incubator which is a replica of the Madison Cooper cold storage plant as described by Hastings (James R. p. 540). The room A is enclosed top and bottom by the partitions E shown in dotted lines and the fan is outside of the room. The partitions are described as "fabrics or perforated partitions" simulating the perforated partitions used in the Cooper cold storage plant. Hastings in his

actual construction used the fabric; he never used the perforated partitions (James R. p. 554).

The fabric panels would check the flow of air from the fan, and no appreciable current of air could find its way through them. The result would be that the air within the chamber would be practically still air, decidedly different from the vigorous current movement which is one of the main essentials of the Smith invention. As Hastings said:

> "Those fabric panels had the effect of checking the air flow and served no useful purpose. They were deleterious to incubation only to the extent of checking the amount of air flow; making the fan less efficient" (James R. p. 551).

and

> "The presence of the fabric panels would affect quite materially the flow of air" (James R. p. 552).

Hastings had in mind a still-air environment for the eggs, following the teachings of the old prior art incubators. He said (James R. p. 551):

> "The expediency, in my mind, of the idea of using fabrics was a combination of the idea of diffused air, which was made a great point of in the Cyphers machines of that day, plus the idea of the distribution of the air equally throughout the area of the egg chamber."

Judge Westenhaver appreciated the effect of these fabric panels when he said in the *Wolf* case, 291 Fed., at page 258:

> "The specification and drawings disclose an apparatus which, in the light of our present knowledge on the subject, is known to be impracticable and inoperative. As described, it merely drives heated air down one side

> of an egg chamber, and permits it to filter through fabric or perforated partitions into the egg chamber, and escape, if it can, on the other side. No provision is made for removing foul air, or supplying fresh air, or conserving moisture. No well-defined channels for the circulation of the air are provided."

Judge Hincks, in the *Hall* case, also sensed their significance when he said (Hall R. p. 219):

> "And if Hastings, as the drawing of his abandoned patent application discloses, had his fan outside a fabric enclosure of the egg chamber, perhaps the only mechanical circulation of air was around the outside of the fabric enclosure; inside the fabric it well may be that the only circulation of air was the product of convection as in the old-style incubators, so that the incubation was proceeding under the old process rather than the new."

It must, therefore, be concluded that this Brooklyn hatchery lacked the forced current circulation of air through a large mass of eggs with sufficient velocity to maintain and equalize the temperature throughout.

There is also doubt whether Hastings had the other essentials of the Smith process at the Brooklyn plant. There is no evidence of any value indicating that he set eggs in staged incubation or that he had any appreciation of the value of that step.

On this question of whether staged incubation was employed in the Davis incubator, there are contradictory statements by Hastings himself. When he testified in the *Hall* case in the spring of 1935, Hastings was very positive that he set the eggs in staged incubation (R. p. 52, 53), stating that he set the eggs on the average of twice a week. However, when he testified in the *James* case two years before, he said (p. 548):

> "I do not remember the details of the time we set these eggs, because *it was of no importance to the principle of incubation* but merely a matter of convenience in handling the eggs and taking off chicks. I have no memory today, after some twenty-two years, on which to base a positive statement as to the exact time of setting these eggs."

The testimony of Davis and his wife that the eggs were set in staged incubation must be rejected for the reasons given by the District Court (Hall R. p. 217):

> "Davis and his wife, to be sure, testified that Hastings practiced staged incubation, but Davis had a busy linotype establishment running in New York day and night; his wife was his bookkeeper. The record does not show that either of them actually saw the eggs set in staged incubation. Their belief in the presence of staged incubation obviously is attributable to the fact that they received bills for frequent shipments of setting eggs. They now say they supposed these eggs were set in the Hastings incubator twice a week, as received. But so far as their actual knowledge is concerned, it well may have been that the eggs received for setting were distributed between the Hastings incubator and the several Cyphers incubators, in use near by, wholly without staged incubation. Thus, on analysis, the practice of staged incubation in connection with this alleged prior use rests upon the verbal testimony of Hastings alone."

When one refers to the only contemporaneous documentary evidence, the patent application, no corroboration of this testimony is found. The patent application, filed while the operations were being conducted, is wholly silent as to this essential feature. Somewhat later, reference was made to the differing thermal characteristics of the eggs during the process of incubation, but as Judge Hincks said (Hall R. p. 217):

> of an egg chamber, and permits it to filter through fabric or perforated partitions into the egg chamber, and escape, if it can, on the other side. No provision is made for removing foul air, or supplying fresh air, or conserving moisture. No well-defined channels for the circulation of the air are provided."

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> "I do not remember the details of the time we set these eggs, because *it was of no importance to the principle of incubation* but merely a matter of convenience in handling the eggs and taking off chicks. I have no memory today, after some twenty-two years, on which to base a positive statement as to the exact time of setting these eggs."

The testimony of Davis and his wife that the eggs were set in staged incubation must be rejected for the reasons given by the District Court (Hall R. p. 217):

> "Davis and his wife, to be sure, testified that Hastings practiced staged incubation, but Davis had a busy linotype establishment running in New York day and night; his wife was his bookkeeper. The record does not show that either of them actually saw the eggs set in staged incubation. Their belief in the presence of staged incubation obviously is attributable to the fact that they received bills for frequent shipments of setting eggs. They now say they supposed these eggs were set in the Hastings incubator twice a week, as received. But so far as their actual knowledge is concerned, it well may have been that the eggs received for setting were distributed between the Hastings incubator and the several Cyphers incubators, in use near by, wholly without staged incubation. Thus, on analysis, the practice of staged incubation in connection with this alleged prior use rests upon the verbal testimony of Hastings alone."

When one refers to the only contemporaneous documentary evidence, the patent application, no corroboration of this testimony is found. The patent application, filed while the operations were being conducted, is wholly silent as to this essential feature. Somewhat later, reference was made to the differing thermal characteristics of the eggs during the process of incubation, but as Judge Hincks said (Hall R. p. 217):

"That Hastings in 1912 knew of staged incubation is slight evidence, if any, that he practiced it in 1911."

The Court of Appeals stated in its opinion that Hastings used staged incubation in the Brooklyn hatchery. To support this finding the Court said that "Davis and his wife both testified that eggs were put in the chambers as they came in, once or twice a week" (Hall R. p. 239). Neither witness claimed to have been there when the eggs were set; obviously, their statements are expressions of inferences which they thought might properly be drawn from their recollection that eggs were shipped in at short intervals. That is the conclusion reached by Judge Hincks as is shown by his comment quoted on the preceding page wherein he said that Davis and his wife testifying twenty-odd years after the events, "supposed" that the eggs which were shipped to their Brooklyn house at intervals were put in the Hastings incubator at similar intervals.

In further support of that assertion, the Court of Appeals made reference to "The Dollar Hen", published in 1909, as showing what Hastings did in the Davis incubator in 1911, the suggestion being that because in discussing his imaginary incubator Hastings hinted at staged incubation as a possibility, he must have used it in the Davis incubator. The Court of Appeals must have forgotten temporarily the admonition of this Court that "the law requires not conjecture, but certainty" (*Coffin* v. *Ogden*, p. 124, *supra*).

Again, the Court quoted a newspaper article published by Hastings in 1912 in which it is stated that the "eggs at all stages can be placed in the same trays", and that he "hatched several thousand eggs under such conditions in his Brooklyn (Davis) plant last year". But this is not staged incubation. The scattering of new eggs through a tray containing old eggs with no definite realization of the value of staged incubation and without any attempt to balance

endothermic and exothermic eggs, is not sufficient. It seems quite evident that at that time Hastings had no conception of the importance of staged incubation.

Furthermore, the Court appears to have overlooked entirely the next sentence in that article where Hastings said:

> "This point, while upsetting a tradition, is of no practical significance because *eggs of different ages should be kept apart as a matter of general convenience*" (James R. p. 1116).

Hastings' failure to recognize the importance of staged incubation appears again in his testimony in the James case where he said "it was of no importance to the principle of incubation" (James R. p. 548).

Even had Hastings set some eggs at intervals less than the full period of incubation, the result would be no different. Accidental use of one step of the process without appreciating its benefits or advantages cannot invalidate a patent granted to one who first recognized the value of that step and was led thereby to employ it in a new and successful process (*Tilghman* v. *Proctor*, 102 U. S. 707, 710; *Eibel Co.* v. *Paper Co.*, 261 U. S. 45; *Boyd* v. *Cherry*, 50 Fed. 279, 283; *Wickelman* v. *A. B. Dick Co.*, 88 Fed. 264, 266, 267; *Franc-Strohmenger & Cowan* v. *Arthur Siegman, Inc.*, 27 F. [2d] 785, 788).

THE DAVIS (BROOKLYN) INCUBATOR WAS NOT A PUBLIC USE, NOR A REDUCTION TO PRACTICE; IT WAS AN ABANDONED EXPERIMENT.

The Court of Appeals did not state whether it regarded the operation of the Davis incubator as a public use or merely as evidence of prior invention by Hastings. It was merely an experiment made by Hastings, and the record clearly shows that it was abandoned; the construction was not duplicated in any of Hastings' later work. An aban-

doned experiment is never regarded as an anticipation of a later issued successful patent.*

That the Davis hatchery was not a public use is clearly established. In writing for the "Boston Sunday Globe" in November, 1912, Hastings said (Hall R. p. 63):

> "Finally in the winter 1910-1911, a small plant was constructed on the Davis Poultry Farm in Brooklyn, New York, and the idea fully demonstrated. This plant was not open to the public as its workmanship was crude and the applications to the Patent Office not completed."

In testifying in the *James* case Hastings said (p. 534):

> "I know and would remember all of those who saw the Davis machine, as there were only a few in number and were personal friends of Mr. Davis and myself."

And again at page 553 of the *James* record:

> "He was hatching for himself alone, or I was hatching for him, his employee, and it was not public in the sense that we had public customers nor any bid made to the outside public to come and visit the hatchery, but Mr. Davis's friends and mine were shown the hatchery.
>
> Q. And you kept it secret because of the fact that you hadn't filed a patent application at that time, isn't that correct? A. I think that was my impression at that time, of not wanting the general public in, yes."

Gaylor v. *Wilder*, 10 How. 477; *The Corn-Planter Patent*, 23 Wall. 181; *The Barbed Wire Patent*, 143 U. S. 275; *Electric Smelting, etc., Co.* v. *Pittsburgh Reduction Co.*, 125 Fed. 926 (C. C. A. 2); *Carson* v. *American Smelting, etc., Co.*, 11 F. (2d) 766 (C. C. A. 9).

In the *Hall* case, Hastings said (p. 56):

> "My incubator was built in the same cellar of the same house where Mr. Davis had his other incubators. I think that it is correct that I testified in the Simms and James cases that I did not operate thi[illegible]hing as a public use but kept it secret because my application for patent had not yet been filed."

The Davis incubator was located in the cellar of the road house and was carefully guarded from the public gaze so that no knowledge of its existence or mode of operation reached any further than the small group composed of Hastings, Davis and their immediate friends and workmen about the place. An attempt was made in the *Hall* case to establish that many people must have seen the Davis incubator because many hundreds of people visited the road house for dinners (Hall R. p. 60). Mr. Davis did not testify that the guests for his Sunday dinners were taken into the cellar of the house and shown the incubator. He carefully avoided such statement, nor would his testimony have been credible had he so stated for it would have been directly contradictory to the quoted statements made by Hastings.

It is well settled that a concealed experimental installation, such as the Davis incubator, is not a "public use" in the sense of the patent law (*Smith & Griggs Mfg. Co.* v. *Sprague*, 123 U. S. 249-257).

The Court of Appeals stated in its opinion in the *Hall* case that the Davis incubator "was in use during the hatching seasons of 1910 and 1911" (Hall R. p. 242). The Court was in error in this holding. Hastings testified that the incubator was not completed until "February or early March, 1911" (James R. p. 545) and he left the Davis' plant "the last of April or the first of May" (James R. p. 546), while the hatching season was still on. There is no testimony in the record that the incubator was operated after Hast-

ings left, except to finish up the operations which had been started. The only man who could have testified on this point was the manager, Miller, who was not called.

Nor was the Davis incubator a reduction to practice. It was built for 6,000 eggs. There are no records of how many hatches were conducted or the number of eggs set or the results secured. Hastings stated that at no period of its operation did it contain more than 2,000 eggs (James R. p. 547; Hall R. p. 55). In other words, the Davis incubator was never more than one-third filled. Such an operation would not afford an adequate test of the Davis incubator. With a few eggs in trays in a room adapted to hold three times as many, some eggs might successfully hatch even though the air was not perceptibly in motion. No one can predict what would have happened if the incubator had been filled to or approaching capacity. Under the conditions under which Hastings operated, the incubator was, in effect, nothing more than a still-air incubator of the old type and operating under the principles of the prior art. As the District Court said (Hall R. p. 219):

> "For all I know, 2,000 eggs set in a chamber three times too large for them and supplied with some heat and some natural ventilation, even without a fan, might have produced as good a hatch as Hastings got."

The Davis Incubator Was Not Successful.

Hastings in his most extravagant statements did not claim that he had made an improvement in percentage of hatch over the old "Cyphers" incubators (Hall R. p. 52-53). In rating the percentage of hatch at 59% Hastings was admittedly guessing, and it is not unlikely that he exaggerated the results secured, but as his results were never better than the "Cyphers" (Hall R. p. 53) and as Davis

said he "had not had very good luck with the Cyphers" (Hall R. p. 58) it is evident that Hastings effected no improvement in the number of chicks produced from a given number of eggs incubated.

One of the main advantages of the Smith invention is the increased percentage of hatch. As this Court said in the *Snow* case (p. 7):

> "By use of the new method it is possible to operate successfully an incubator containing as many as 52,000 eggs, and the percentage of eggs successfully hatched by artificial incubation has been materially raised."

Thus it is apparent that the Davis incubator never demonstrated that it was capable of producing the results of the Smith invention.

The record also contains a very striking admission of failure of the Brooklyn hatchery in the words of Hastings spoken shortly after the event. In an amendment to his abandoned application dated May 24, 1912, Hastings referred to "a painstaking and very costly series of experiments" (James R. p. 744) which he had performed. Prior to that date the only experiments which he had performed were at Brooklyn, N. Y., and Muskogee. No one who had *successfully* operated the Brooklyn incubator would so write to the Patent Office. Had the Davis incubator been successful, Hastings would have proclaimed the fact to the Patent Office and to everyone else.

For most of the facts about the Hastings incubators at the Davis farm in Brooklyn and at Muskogee, one is forced to rely on the testimony of Hastings himself, but there is much reason for questioning how reliable a witness he is. For instance, immediately following the brief experiment with the Davis incubator, Hastings published a prospectus for the purpose of getting funds to build another incubator. In this prospectus he said:

> "In the season of 1910-11 I built and operated a 15,000 egg single compartment hatchery on the poultry farm of W. B. Davis in a suburb of Brooklyn" (James R. p. 554 and Hall R. p. 55).

This was admitted by Hastings to be an "exaggeration" and not true (Hall R. p. 56). Also Hastings said:

> "I exaggerated the capacity more than two and a half times for the purpose of getting people to put money in it. As a matter of fact I hadn't run my incubator with more than 2,000 eggs in it at the time I made this statement" (James R. p. 555).

This admission of exaggeration in presenting certain of the facts about his incubator suggests that the same willingness to exaggerate may have entered various others of his statements and that therefore hesitation and careful scrutiny are necessary before accepting his uncorroborated statements.

The final chapter of the history of the Hastings incubator at the Davis farm stamps that effort quite definitely as an unsuccessful and abandoned experiment. Use of the incubator extended over March and April of 1911 (James R. p. 506). Hastings departed about the first of May, 1911, never to return (James R. p. 546). The incubator remained in the cellar of the Davis house, unused and abandoned for aught the record shows. In 1913 Davis sold the farm, and, at his direction, the incubator was "knocked to pieces and put out in the back yard and *burned up along with a bunch of other trash*" (Hall R. p. 61).

Thus the incubator was deserted by both Hastings and Davis, Hastings who had put his efforts into it, and Davis his money. Had it been successful, Hastings would have continued to operate it and to exploit it; but even if he had deserted it and it was a successful operative device, doubtless Davis would have continued with the use of the incubator and probably with its exploitation.

The Court of Appeals seemed to find excuse for this outcome of Hastings' effort at the Davis farm in the fact that Davis suffered financial reverses and that the incubator could not be removed except by dismantling it. This disregards the probability that if the incubator had been successful, Davis would not have suffered financial reverses. He would have had immediately at hand a source of wealth far richer than his printing establishment or his chicken farm, and even if the incubator had to be moved to a different location and could be moved only by dismantling it, it could have been reconstructed or duplicated in a new location instead of burning it "along with a bunch of other trash".

The foregoing facts are to be considered in contrast with the statement by the Court of Appeals that there is "uncontradicted testimony" that the Hastings incubator at the Davis farm "was an operative success". The testimony about its operation is that of Hastings, Davis and Davis' wife. Neither Davis nor his wife gave any testimony as to whether or not the incubator was "an operative success". They could not because they did not know what degree of success or non-success was attained (Hall R. p. 59-60, 62). Thus, the specified "uncontradicted testimony" is that of Hastings alone. We have shown that Hastings admitted exaggeration of the facts about the incubator, that he was biased by envy of Smith's success and that he claimed no advantage for his incubator from the standpoint of percentage of hatch. Also, analysis of the asserted operative success reduces it to nothing more than the fact that the Hastings incubator at the Davis farm produced chicks from eggs. Whether or not it produced them cheaper or better or in a way that was an improvement in any other respect is not proven, and the fact that it was capable of producing chicks from eggs is quite unimportant because there were plenty of available incubators at the time which would do that.

The conclusion of the District Court in the Hall case on the matter under discussion is much more sound. Judge Hincks' summary of the condition presented by the testimony under review is (Hall R. p. 220):

> "I am thus left in doubt as to whether Hastings on the Davis farm in the spring of 1911 did what it is said he did; if so, whether he used the method of claim 1 of the patent in suit; and if so, whether his use thereof was a successful use within the rule of *Corona Cord Tire Co.* v. *Dovan*, 276 U. S. 358."

Hastings' testimony, the only testimony on this Davis incubator which can be included within the Court of Appeals' reference to uncontradicted testimony, presented nothing calling for contradiction because it asserted no improvement in the Davis incubator over other incubators such as those in use on the Davis farm, and as to the incubator being "an operative success", its history contradicts that overwhelmingly. The use of this Davis incubator was discontinued. The incubator was abandoned by its designer and by its financial sponsor at a time when both were greatly in need of a source of revenue and, when something had to be done with it, it was destroyed and later was referred to by the appropriate designation of "trash".

The Muskogee Incubator.

By resort to the false statements above referred to about the operations at Brooklyn, Hastings, in 1911, secured the necessary financial support for the building of his second incubator (James R. p. 555; Hall R. p. 56). Concerning this incubator nothing appears in the *Hall* record; the testimony and exhibits are all found in the *James* record.

Leaving Brooklyn in May, 1911, Hastings journeyed to Kansas where he sought out Rees V. Hicks, the editor of the poultry magazine "Poultry Culture" (James R. p. 511), who was not called as a witness nor his absence excused. Through Hicks, Hastings met John Lieber "a prosperous and leading spirit" of the rapidly growing town of Muskogee, Okla., then on a great boom (James R. p. 512). Lieber advanced the money and gave Hastings a building in which to construct his incubator and left him to his own devices.

THE MUSKOGEE INCUBATOR WAS NOT A DUPLICATION OF THE BROOKLYN INCUBATOR—NOR DID IT EMBODY THE SMITH PROCESS.

The Second Circuit held that this Muskogee incubator "was similar to the one built for Davis in Brooklyn". This is far from accurate.

The incubator Hastings built at Muskogee differed materially, both in construction and method of operation, from the Davis incubator. Instead of a single chamber to receive the eggs, this incubator had a long row of seven chambers, each intended to receive about 5,000 eggs. Each chamber was substantially closed and distinct from every other chamber and had small openings at top and bottom, the opening at the top being controlled by a sliding damper by which the amount of heat admitted to each chamber could be regulated (James R. p. 603). Across the top of the row of chambers there were one or more flues (the number not fixed in the record) leading from a single fan of the common type. The fan was supplied by Lieber from a moving picture theatre which he owned and operated (James R. p. 604).

In a contemporaneous article published in "Poultry Culture" of February, 1912, and stated by Hastings to be a correct description of the incubator (James R. p. 520), it

appears that there were two flues or ducts extending from the fan to the several chambers. One of these flues contained a heater, the other did not, it being Hastings' purpose to maintain different temperatures in the chambers in accordance with the progression of incubation. As the article says (James R. p. 1115-16):

> "varying degrees of air temperature will be required in heating (or cooling) eggs in varying quantities and different stages of incubation. To accommodate this need, the inventor has ingeniously arranged that the air be divided, after it leaves the fan, into two flumes. One of these passes the heater and the other does not. Into the ceiling of each compartment slide dampers open from either flume, so that by opening the two in proper relative proportions any temperature desired may be attained in any compartment."

There are no contemporaneous drawings or photographs of the Muskogee incubator showing its interior construction. Just as in the case of the Davis incubator, Hastings made a drawing of the Muskogee incubator for use in the *Cooley* case just before the trial; and in the *James* case the attorneys for the defendants had another drawing made (James R. p. 541). The Cooley and James drawings differ in important details of fan arrangement (James R. p. 542-543; 560) but neither of them shows the two "flumes" described in the only contemporaneous description of the Muskogee incubator.

As to the method of operation which Hastings practiced at Muskogee, we have the evidence of defendants' witness Lieber, the only witness other than Hastings who knew how the incubator operated. Lieber testified in September, 1925, in the *Stone* case:

> "This incubator had six separate compartments, each holding 5,000 eggs. He had valves or cut-offs connected with each of these sections, or compartments, by which he could regulate the heat of the air in each

section or compartment. He could have one temperature in one compartment and a different temperature in another. He explained to me at the time that this was necessary because when eggs were first placed in an incubator they required the maximum amount of heat whereas a few days before they hatched the chicks in the eggs furnished considerable heat, and therefore it was not necessary to supply as much artificial heat just before the chicks hatched. He gave this as his reason for having to have the device so that it would have one temperature in one compartment and a different temperature in another compartment" (James R. p. 776-7).

In the *James* case he reaffirmed this statement of operation at page 626 saying:

"I remember it was a 30,000 egg incubator, six (6) compartments at five thousand (5,000) each, and one (1) compartment that he used to take the chicks off in, because he had to have different temperatures in each de(com)partment."

And at page 627:

"His idea was, according to my recollection, that he would have a continuous hatching all the time. That is, he could start eggs in one compartment, carry on for a few days, and then move them to another compartment and leave for a few days. And then move on for another period until they finally got down to the end. Yes, that is, if he was crowded for space, as new eggs came in he would put the eggs in the first one, and keep on moving them, and he would be putting eggs in the first compartment and taking chicks out of the last one at the same time. And in the intermediate compartments would be eggs further advanced in the incubation. And he adjusted those slides so more or less hot air would go into each compartment, to control the temperature. The temperature of the different compartments was different. My recollection

is that the temperature varied about ten degrees from the starting to the end."

By 1933 it had become apparent to representatives of respondents that the method of operation which Lieber said was employed was not the Smith method at all. The result is just what one would have expected, namely, vigorous protestation by Hastings in the *James* case that the process described by Lieber is not the one which was employed. Hastings said he set eggs of different ages of incubation in each compartment and hatched the chickens at the bottom of each compartment (James R. p. 535). There is absolutely no record evidence to support this testimony of Hastings, and it is contradicted by the only other witness who knew how the incubator operated, namely, Lieber, who said that the eggs were all hatched in one compartment (James R. p. 603).

On the other hand, there is contemporaneous record evidence that Hastings was in fact practising the process described by Lieber.

We have already referred to that portion of the "Poultry Culture" article describing the two "flumes" leading from the fan, one leading past a heater, and to the fact that by regulation of the dampers "any temperature desired may be attained in any compartment" (James R. p. 1116, top of first column). In the same article at the top of column 2, page 1115, it is said:

> "During hatching, trays with higher sides are placed on alternating tray slides, thus requiring two compartments for hatching the twenty trays incubated in one."

Here is a definite statement that the *full complement* of the hatching capacity of the incubator was incubated in *one compartment*, which, necessarily forecloses any possibility that eggs of different ages were located in the different compartments. This quotation establishes a condition

wholly incompatible with Hastings' testimony in the *James* case. This same method of operation is described in Defendants' Exhibit 26 A (James R. p. 1121) prepared by Hickox and stated by Hastings to be "a very excellent and accurate description of that incubator" (James R. p. 522).

Also, in the "Poultry Culture" article, Hastings said "eggs of different ages should be kept apart" (James R. p. 1116), which is consistent with Lieber's testimony but inconsistent with that of Hastings on this subject of the method of operation of the Muskogee incubator.

At the date of the "Poultry Culture" article (Feb., 1912) Hastings had hatched only a single setting of eggs in one compartment, and the photographs show only this one setting of 250 eggs, all of which were set at one time and *not in staged incubation* (James R. p. 556). The photograph in the upper left hand corner shows the hatch partially completed with some of the eggs hatched and others about to hatch.

That Hastings actually practiced the process of moving the eggs progressively from compartment to compartment as incubation progressed, and transferring each set of eggs finally into the end compartments for the hatching, is shown by an examination of a later photograph taken "in the midst of the hatching season of 1912" (James R. p. 526). We refer to the photograph Exhibit 26-D imperfectly reproduced on page 1127 of the record. This photograph shows the seven chambers of the Muskogee incubator with a considerable number of trays drawn forward. No hatching is being done in the chambers in the foreground. But in the background it will be noted that the trays have the high sides characteristic of trays for hatching (James R. p. 527). Therefore, it seems clear that the structure illustrated is one in which incubating was practiced as Lieber described, namely, by moving the eggs along the series of chambers progressively until they reach

the chambers at the end of the row where the hatching occurs.

The Muskogee incubator required the operator to adjust the several inlets to the compartments to maintain the different temperatures in each compartment dictated by the stage of advancement of the eggs therein. This was a problem accentuated by the heat characteristics of the endothermic and exothermic eggs and complicated by multiplication as the number of eggs in each compartment increased. The circulation of air through each compartment of the Muskogee incubator was scarcely perceptible and in reality a still-air condition. This was no advancement over prior art incubators which involved still air conditions and the same problem of careful adjustment of temperatures as incubation advanced.

That Hastings utilized only an ineffective current of air and required a careful adjustment of the several chambers to conform to the stage of egg advancement in each compartment, is established by the evidence and corroborated by the statements quoted from Hastings in that portion of the brief before the Patent Office in which he was referring to his Muskogee operations (James R. p. 756):

> "a current of air is blown past each and every egg *at the rate of thirty feet per minute*[1] * * *. This method of heating keeps the temperature of the eggs in the advanced state of incubation down within a few degrees of that of the air, *the exact difference being regulated at will by adjusting the speed of the fan. When properly adjusted* the same blast of air used to heat fresh eggs does equally well for eggs in the advanced stages. * * *"

And on page 755 in the body of the attorney's brief:

> "it becomes a comparatively simple matter *to regulate both the temperature,* the humidity or the gaseous

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[1]That this is an ineffective speed is shown at pages 59 and 60, *infra.*

> composition of the air, inasmuch as all of the air is drawn positively through a circulatory system *and may be modified at any point during its circulation*".

Each compartment of the Muskogee incubator was in effect a still-air incubator of the prior art with the difficulties of operation greatly increased by the ambitious capacities. In the words of this Court in referring to other prior art incubators, the Muskogee incubator involved the same "necessity of varying by nice adjustments the temperature of the applied air, so as to conform to the varying temperatures of the eggs as they passed through successive stages of incubation" (*Snow* case, p. 7).

Thus, Hastings' operation at Muskogee was radically different from the Smith method. This being true, it is immaterial whether the Muskogee use was an operative success, *for it was not the Smith invention.* The process which Hastings used at Muskogee was, in fact, the identical process which had been known in the prior art for years. In the year 1887, British patent No. 10,288 issued to one Gardner (James R. p. 1003), described in detail this same procedure which Hastings used at Muskogee. That procedure is distinct from that of the Smith invention as was stated by defendants' expert in the *James* case (p. 427):

> "Q. And as I understand the Smith patent—and disagree with me or not, as you like—is this correct; I will put it this way; is this a correct statement of the Smith patent, that you maintain a temperature substantially uniform throughout the chamber? A. That is the wording of it, yes, sir.
>
> Q. And then your temperature of the air around the cold eggs is substantially the same as the temperature of the air around the hot eggs? A. That is what the wording means.
>
> Q. And you have in the Gardner patent, however, the temperature of the air different on each of the different sets of eggs? A. That is correct."

The Muskogee Incubator Was a Failure.

Persuasive evidence of the truth of the above statement is that Hastings "never built another incubator exactly like the Muskogee incubator" (James R. p. 571). Nor has any practical hatcheryman since that date duplicated the Muskogee incubator or attempted to operate upon the principle employed by Hastings. In addition, there is positive proof of its failure.

When Hastings left Muskogee in May, 1912, the hatching season was still on, but no eggs were set in the incubator in 1912 after his departure (James R. p. 537). In 1913, Lieber and one Hastain tried to operate the incubator, the latter putting an additional $500 in the enterprise (James R. p. 774). But this effort was a failure. It failed though Hastain was said to know more about the operation of the incubator than any one other than Hastings (James R. p. 785). Testifying in the Stone case in 1925, Lieber said (James R. p. 776):

> "Q. After Milo Hastings left, did you or Ed Hastain undertake to operate the Hatchery? A. Mr. Hastain and a brother-in-law of his, named Dierfield, operated the hatchery during a part of 1913. But neither of them knew anything about the principle of the hatchery and they had no success."

And on page 785:

> "Q. How long did Hastain continue to operate in the Spring of 1913? A. My recollection is that they only put in one batch of eggs and closed down the hatchery when the hatch was unsatisfactory.
>
> Q. Why did he not try the second hatch? A. We could not figure out its failure to hatch in 1913, except on the theory that Milo Hastings, the inventor, was the only man who knew how to operate it."

Realizing the damaging effect of the testimony of Lieber, the defendants in the *James* case induced Lieber to testify differently in 1934. At page 607 of the *James* record, Lieber testified:

> "Mr. Dierfield put some money in the business the next spring, and he" (Hastain) "and Mr. Dierfield operated it during the season of 1913. I say they operated it. I mean by that, they hatched eggs in it."

On cross examination, Lieber made his statements more emphatic, saying on page 622 that it was "absolutely not" a failure in 1913 and that "hundreds of chickens were taken out to Mr. Hastain's farm in 1913 from that hatchery.". When confronted with his testimony in the *Stone* case, Lieber took the absurd position that he had not changed his testimony. It is quite significant that neither Hastain nor Dierfield was called to testify for the defendants, nor was their absence excused.

Lieber's unreliability is aptly illustrated by this contradictory testimony. This fact was apparent in the *Stone* case where it appeared that he had insisted upon reimbursement for all of his losses as the price for testifying in the *Cooley* case. The master commented upon this in the *Stone* case, saying (Appendix, p. xvi):

> "John G. Lieber, who was financially interested in the Hastings hatchery, testifies that hatches of about fifty per cent. were obtained. It is apparent, however, that Lieber was interested and more or less hostile with the hope that at some stage of the litigation of Smith's patent and the infringement suit brought by the Buckeye Incubator Company against Cooley, he might receive a return of the money he lost in the Hastings venture."

With these facts we have stated in mind, it is surprising to note that the Court of Appeals found that the Muskogee

hatchery "ran through the hatching seasons of 1912 and 1913" and that counsel persist in their claim that the Muskogee incubator operated more than one hatching season. In 1913 the Muskogee incubator was entirely dismantled (James R. p. 624) so that *not a trace of it is in existence today.* Respondents maintain that a certain blower fan shown in Exhibits 22 B to 22 F is a relic of the Muskogee incubator, but, as we point out below (*infra,* p. 51-52), it is impossible, in view of the testimony, to connect this fan with the Muskogee incubator.

The destruction of the incubator and the complete financial and operative loss which it brought to all who were connected with it stamps it with the ineradicable brand of failure and abandoned experiment. As Hastings said: "No one made any money out of it" (James R. p. 571). Lieber said (p. 607): "The venture was not a financial success. In other words, I did not make money out of my investment in that incubator. No, I lost it all." How different the story would have been had Hastings conceived the Smith invention! There would then have been no excuses and no attempts to disguise the palpable failure of the enterprise and no need for either. Hastings and his friends and associates in Muskogee would have reaped the rich reward of success instead of the ashes of failure. As Lieber said (James R. p. 622):

> "But he" (Hastings) "got disgusted and left and left the thing on your hands? A. Yes, sir, that is right."

Hastings said (James R. p. 536) that he was "discouraged with my work".

Testifying in 1925, Lieber said (James R. p. 775):

> "Milo Hastings was an eccentric sort of a fellow and became disgusted with the mess in which he had gotten the business of the hatchery in. He finally left, turned it over to me, and told me to do the best I could with it."

Lieber was so disgusted and discouraged with the whole incubator business as a result of this experience that he never used or operated another one. As he said (James R. p. 631):

> "Q. You used an incubator? A. No, sir, just bought chicks; never used an incubator; one was enough for me.
>
> Q. Your experience with the Hastings Incubator was enough for you? A. Yes, sir, one was enough for me."

Hastings had every opportunity to succeed. Lieber was a wealthy man at that time and Hastings was given entire charge of the building and operation of the incubator. Muskogee was the center of a large poultry industry (James R. p. 652), and Hastings was enthusiastically received by the poultry men of the vicinity. He had the endorsement of the influential "Poultry Culture" and the support of the Poultry Department of the Kansas Agricultural College. He associated with him an energetic publicity expert named Hickox, who spread the news of the Hastings incubator in the scientific journals, periodicals and newspapers of the country. Here then was the golden opportunity for Hastings if the construction and method of operation of his incubator were those which were productive of successful commercial operation.

Hastings and those who supported and patronized his hatchery were doomed to a great disappointment (James R. p. 649). Shortly after Hastings started operations, Shanafelt, a successful and outstanding poultry man, took 200 eggs to the Hastings hatchery. They were a choice breed, and eggs from the same flock had hatched under hens, but he received not more than seven chicks in return (James R. p. 648). Cory, also an experienced breeder, took down three lots of 100 eggs each and received no chickens at all (James R. p. 645). Cory testified (p. 646):

> "I never got any results at all from the eggs which I took to Mr. Hastings, not a chicken."

Results from the same flock, hatched under other conditions, averaged about 50%, and he had no complete failure except from the eggs he took to Hastings (James R. p. 645). Ward, who was intimately associated with Hastings and with whom Hastings discussed the failure of his incubator (James R. p. 657), testified (R. p. 657):

> "The reports I got concerning the Hastings' hatches were that the first hatches he got, he did not get over from 5 to 20 per cent. of the fertile egg hatches. In those days we counted fertile eggs to get a percentage, which were candled afterwards. At first he got from 5 to 20 per cent. He remodeled the incubator. After he remodeled it, he got better hatches, but at no time did he ever get over a 50 per cent. hatch."

Ward also testified that poultrymen around Muskogee refused to continue to patronize the Hastings hatchery because of the poor results secured (James R. p. 658). Hastings pretended that he never knew Ward (James R. p. 534).

In 1925, S. J. Anderson, an experienced poultryman, testified that he took 150 to 200 eggs to Hastings' incubator in March, 1912, and received back five chicks. They were fertile eggs and were hatching under hens (James R. p. 768).

Respondents placed L. W. Pitts on the stand who testified on direct examination that he did not remember the percentage of hatch but that he saw the incubator in operation. On cross examination it was brought out that in testifying in 1925, this same witness had said that Hastings "didn't have a very good hatch, and the chickens that were hatched were rather weak", and that "the percentage of chicks to the eggs was very low" (James R. p. 637), and on page 638 he reaffirmed this as his present recollection.

C. T. Brewer testified that he took eggs to the hatchery and received some chicks but whether these chicks were produced from the eggs which he took in, he had no means of knowing. As Brewer testified "so far as my knowledge is concerned, the chickens we got from Mr. Hastings might have come from some eggs other than ours" (James R. p. 641). It is admitted that Hastings was in the habit of supplying customers with chicks hatched from eggs received from other sources. As Lieber said (James R. p. 630): "People got back a lot of chicks from eggs they never sent." It is highly probable that whatever chicks were received by Brewer were hatched from eggs supplied by some one else. Therefore, the number of chicks which Brewer received means nothing as to the percentage of hatch.

Van D. Campbell, who was only twenty years old at the time, testified that his parents sent some eggs to Hastings' hatchery but he had no knowledge of how many chicks they received (James R. p. 642). His parents who were living in Muskogee where the depositions were taken were not called to the stand (James R. p. 644).

No records were produced to show the results of the Muskogee operations though records and books were kept (James R. p. 569).

Hastings admitted repeatedly that the results secured were very disappointing. He said at page 575 of the James record, "We had many disappointing hatches", and in writing to the Patent Office on May 24, 1912, just after the Muskogee experience, Hastings said, as noted above, that he had conducted "a painstaking and very costly series of experiments". In the article appearing in the "Boston Sunday Globe" of November 10, 1912, Hastings said, referring to his Muskogee and Brooklyn incubators, that he was "finding out other ways to better the hatching results of the cruder machines" (James R. p. 575).

In the Canadian suit Hastings testified:

"The hatching records as a whole for that plant were not high and there were many individual cases of very poor results. I should judge that the hatching record of the whole would run around 40 per cent." (Appendix, p. xxxv).

Finally, we have the admissions of Hastings and Lieber that the results secured were very erratic. Hastings said (James R. p. 519) that the results were "highly variable", and Lieber testified (James R. p. 607) "it ran from nothing in some cases to as high as 75 and 80% in other cases". This unreliability in operation is ample indication that there was something radically wrong. No machine with the variation of results testified to by Lieber and Hastings can be said to be an operative success or even to have emerged from the stage of experimentation.

Excuses Offered for the Muskogee Failure.

Many excuses are offered for Hastings, but if the incubator had been an operative success no excuses would have been necessary.

One excuse is that the eggs brought into Hastings' plant were of poor quality and that is the reason they did not hatch. On the contrary, however, each of his dissatisfied customers was an experienced poultryman and had normal success with the same eggs in the old fashioned way. Another excuse for the failure of the Hastings incubator is that it was a financial failure due to the fact that Hastings charged only one cent for hatching an egg and that price was too low, but Hastings testified that he purchased for their own production thousands of eggs of good hatching quality from other sources throughout the season (James R. p. 519), and Lieber testified that Hastings was hatching his own eggs at the same time that he was doing hatching for others ("custom hatching") (James R. p. 623). Therefore, the one-cent rate does not excuse very much in any

event and no reason has been advanced as to why that rate could not have been raised.

In writing in the "Boston Sunday Globe" in November, 1912, Hastings ascribed his failure to the weather (James R. p. 575).

Respondents have also urged that the fan installed in the Hastings hatchery was insufficient in volume. When Hastings built the incubator he installed a fan which he secured from a moving picture theatre which Lieber owned. This fan was admitted to have been a failure (James R. p. 516; 561) and the disastrous hatches were attributed to it. The claim is made that when it developed that the first fan was a failure, Lieber purchased a new blower type fan from the American Blower Company of Detroit, Michigan, and this fan was substituted for the inadequate ventilation fan. The record lacks any documentary proof of the purchase or delivery of this fan, nor is any excuse offered for the failure to substantiate this testimony. None of Hastings' customers ever saw the blower fan. The fan which is shown in the photograph Exhibit 26 C (James R. p. 1126) and which is reproduced in the "Electrical World" of July 6, 1912 (James R. p. 1120), referred to by the Court of Appeals, is the open bladed ventilation fan which Hastings claimed he used "before the main hatching work of the season was under way" (James R. p. 517). However, this photograph was taken at the same time as the photograph Exhibit 26 D (Hickox, James R. p. 597) and Hastings said the latter was taken in the height of the hatching season (James R. p. 526). Lieber, testifying for the respondents, said that the new fan was purchased and installed in January, 1912, "within three days after he first started the incubator with eggs in it", and before Hastings had completed any hatches in the machine (James R. p. 615). This contrariety of testimony not only nullifies this excuse for the failure of the hatches, but places Lieber and Hastings in direct contradiction. An electrician, Peabody, was called to testify

as to the installation of the blower fan, but he testified to an entirely different state of facts when he said (James R. p. 601) that the *second* fan was one which "we had furnished to Judge Lieber some time previous", thus destroying the testimony of Lieber and Hastings that a new blower fan was purchased from the American Blower Company and installed in the hatchery.

At the time of taking Lieber's deposition, a blower fan illustrated in the photographs (Exs. 22 B-F; James R. p. 1113-14) was exhibited at Hastain's farm and was offered in evidence as the blower fan concerning which Lieber and Hastings testified. *This is not the fan.* It is a spurious substitute. At three places in the James record and in testifying in the *Cooley* case (p. 516, 537, 567, 663), Hastings said the blower fan had an 8-inch outlet. Respondents attempted to introduce these photographs without producing the fan, and Lieber testified that he "thought it was an 8-inch fan" (James R. p. 614). It was only upon the insistence of petitioner that the parties were conducted to the fan itself (James R. p. 662). *When measured, the fan had a 12-inch outlet and not an 8-inch outlet as repeatedly stated by Hastings.* In other words, the spurious fan produced by Lieber was over twice as large as the fan which Hastings testified was installed (James R. p. 663, 664). Respondents have sought to belittle this serious discrepancy, but it is plain from the record that the fan now offered is not a true relic of the Muskogee incubator.

Finally, respondents have sought to excuse the testimony of the customers who had such discouraging results from Hastings' Hatchery by claiming that Hastings stole their chickens (James R. p. 647).

Hastings' Port O'Connor Hatchery.

In May, 1912, Hastings was in a "mess" (James R. p. 775). The dream of success and fortune to be made from

his ideas collapsed and he surveyed the ruin all around him. He borrowed $100 from Lieber, and shook the dust of Muskogee from his feet, wholly disgusted and defeated, and never returned. Some eggs were still in the machine but he left without caring to find out what happened to them (James R. p. 570). He told Lieber to do the best he could and fled (James R. p. 775). When he started in the early part of the year, he had planned to double the capacity at Muskogee; and the Kansas Agriculture College had agreed to build an incubator there if the Muskogee experiment proved to be a success (James R. p. 567). But opportunities like these which had seemed to present such glowing prospects earlier in the year had all been lost in the failure of the Muskogee incubator and Hastings went to Petaluma, California, looking for a job (James R. p. 581).

Receiving no encouragement at that poultry center, he next appeared at Port O'Connor, Texas, whence emanated the statement in the "Boston Sunday Globe" of November 10, 1912:

> "At Port O'Connor with more experience and more funds at his command, Mr. Hastings has far excelled his previous efforts and has here completed and begun operating what is unquestionably the greatest hatchery ever built" (James R. p. 574).

At Port O'Connor, Hastings built a new incubator with 150,000 egg capacity and differing in construction from both the Muskogee and Brooklyn plants, but this incubator was never operated beyond placing one batch of 720 eggs in it (James R. p. 573). That was all that was ever done at Port O'Connor. After this one hatch, Hastings fled again, and, except for the brief sojourn with the Hall Incubator Co., this marked the end of his experimental work until long after Smith perfected his process, received his patent and was operating a highly profitable incubator enterprise at Cleveland, Ohio.

However, and illustrating the unreliability of the Hastings publicity, his admitted failure did not prevent him from spreading false statements and claims of remarkable success. An article entitled "Hatching Chickens by Wholesale" appeared in the "Technical World" of April, 1913, in which the Port O'Connor plant is represented as a going concern with 150,000 egg capacity, with compartments holding 10,000 eggs, and capable of "turning out a chicken every twelve seconds" (James R. p. 573).

Hastings' Subsequent History.

Hastings next connected himself with the established Hall Incubator Company, for which he designed a still different incubator. This, too, was a failure (James R. p. 575, 576) and he left that company.

In 1917 or 1918, he was called to Tiffin, Ohio, at the instance of a poultryman named Hoppel, but on his way stopped off in Cleveland to see Dr. Smith who was then in full operation in his own plant and had started the Buckeye Company in the manufacture of the successful Buckeye Incubator using the Smith principles. His object was to secure employment from the successful inventor but he failed (James R. p. 576).

He then went on to Tiffin and after having learned how the Smith incubator operated from his employer, he there built a hatchery in which he "tried out a method of hatching very much more like the Smith Buckeye devices than I had used in the past" (James R. p. 577). Again, at the Hoppel plant, Hastings spread himself in print, writing the article entitled "Hastings' Mechanical Draft Chick Hatchery" which appeared in the "Reliable Poultry Journal" of April, 1918 (Deft.'s Ex. 20, James R. p. 1106-1109). In this article Hastings lauds himself as the inventor of the successful incubator.

Even with the benefit of the knowledge he had acquired from Smith, Hastings could not make a successful incu-

bator, and after another season at it, he left and never again engaged in the incubator business. From incubators he turned to the literature of tabloid periodicals. Since the complete failure of his series of experiments at the several places named, his sole function in the incubator field has been that of an itinerant witness, ready and willing at all times to testify at the behest of infringers of the Smith patent. His career in this field is set forth at page 54 of the *Hall* record and he said it had proven to be a much more profitable one.

POINT III.

Neither in the Hastings abandoned application as filed, nor in the subsequent amendments thereto did Hastings disclose the Smith invention.

Hastings filed his application for patent in May, 1911, after the partially filled Davis incubator had been given a brief trial. The application (James R. p. 731) contains a full disclosure of Hastings' idea that "the problems of refrigeration and the problems of incubation were very similar, in fact we might say identical" (Hastings, James R. p. 540). Hastings admitted (James R. p. 541) that his "invention" did not go beyond the adaptation of the cold storage process to incubation and that he finally abandoned the application when the Patent Office held that such a conception was not patentable. Hastings did not understand heat development in a large mass of eggs, nor the importance of balancing endothermic and exothermic eggs, since otherwise he would have mentioned them in the application. Nor did he realize the necessity for vigorous current movement of air through the eggs, since otherwise he would not have shown fabric partitions above and below the egg chamber through which the air had to filter to and from the chamber and which were effective obstructions to air movement.

The application was promptly rejected. On June 19, 1911, Hastings presented an argument for allowance based solely on the substitution of a fan-impelled circulation of air rather than natural draft (James R. p. 736). He was again and finally rejected August 14, 1911. He then appointed the firm of Church & Church as his attorneys (James R. p. 740-741). On May 24, 1912, these attorneys filed a new claim (James R. p. 743). With this claim was presented an argument in which appears the first reference to the varying temperatures of eggs during the process of hatching.

This communication to the Patent Office followed Hastings' disastrous experiences at Muskogee. It is probable from this sequence of events that it was through his experiences at Muskogee that Hastings learned that heat generated within eggs makes mass incubation a vastly different problem from the preservation of inanimate foodstuffs in cold storage.

Hastings' attorneys wrote that he believed the heat characteristics of the eggs "to be one of the principal reasons why, *up to the present time*" (May 24, 1912) "hatcheries of large capacity have proven to be practical failures" (James R. p. 744). This appears to be a reference to Hastings' own abortive efforts, particularly as in the following sentence he said he had "by a painstaking and very costly series of experiments" discovered the reason for this failure. But he had no other remedy to offer than mechanically forced circulation of air. *There is no suggestion in this entire argument that setting in staged incubation was a necessary or desirable step toward the solution of the problem* and the rate of air movement indicated is far below that which experience has shown is essential to successful operation.

The application was appealed to the Board of Appeals of the Patent Office, and on December 20, 1912, after the abortive attempt at Port O'Connor, Texas, a brief was filed. In this brief Hastings' attorneys commented at

greater length on the difficulties arising from the heat development in the eggs. But this discussion must be viewed in the light of what *Hastings* had done, because an abandoned application can be used only to "clarify the character of a claimed prior use", a principle which the Court of Appeals stated (Hall R. p. 242) but failed to apply.

A serious error of the Court of Appeals was in viewing this file wrapper argument in the light of what *Smith* did, and, knowing what *Smith* did, reading his process into the argument.

It will be recalled that at Muskogee Hastings built a seven-compartment incubator with the eggs in a different stage of advancement in each compartment, each setting being moved to a new compartment every third day. A single fan propelled air to all the compartments but each compartment had its individual damper which could be positioned to regulate the freedom of entrance of air into the compartment and thereby maintain the different temperatures in the several compartments at the points desired. This is not staged incubation, and it is not the invention of the Smith patent. It is a procedure which has never been used successfully by any one so far as the record shows.

This Muskogee procedure is what is referred to in the brief in the file wrapper of the Hastings application. Neither the specification of the Hastings application, nor the drawing of that application, nor the brief referred to by the Court of Appeals, nor any other document connected with the application contains that essential of the Smith invention commonly referred to as "staged incubation". The distinctive requisite of staged incubation as practiced by Smith is that eggs in various stages of incubation are subjected to the same body of air, moving in repeated cycles over all the eggs and thus maintained at the same temperature throughout the entire process. In accordance with the unsuccessful Muskogee operation, however, there were eggs in seven different stages of incubation, in seven different chambers or compartments, and receiving seven differ-

ent currents of air which maintained seven different temperatures in the seven compartments.

The opinion of the Court of Appeals contains nothing indicating that the Court understood what was the actual method of operation of the Muskogee incubator as developed in the testimony of Lieber and shown by the contemporaneous Hastings' publications, to which we have referred. Instead, the brief filed in connection with the Hastings application appears to have been read by the Court with the *Smith* invention in mind, whereas it should have been read with the Muskogee operation in mind, for it was written in Hastings' behalf shortly after the conclusion of the Muskogee effort. When the brief is read as it should be, keeping in mind the knowledge available at the date when it was written and without aid from the subsequent invention of Smith and the successful utilization of that invention, it becomes apparent that the brief does not refer to what has since become known as "staged incubation." Instead, the reference throughout is to such a procedure as that practiced by Hastings at Muskogee involving the use of several compartments, each containing eggs in some *one stage* of incubation, and separately regulable dampers for each compartment whereby its temperature may be adjusted independently of all of the others to maintain therein a temperature different from those in the others. That is not the staged incubation of the Smith patent. It is for that reason that the Hastings application, with or without the brief filed in connection with it, contains no disclosure of this essential of the Smith invention.

Nor does the application, with or without the brief or any other paper filed in connection with it, disclose another of the essentials of the Smith invention referred to in claim 1 as maintaining in the egg compartment of the incubator a movement of air

"of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage."

The Hastings application is entirely indefinite as to the volume and velocity of the air movement within the incubator. It illustrates and describes an incubating chamber having a fabric covering at its top and bottom through which the air impelled by the fan is said to flow. Any such fabric covering would so impede the air flow as greatly to restrict its rate of movement (*supra*, p. 25, 26 and James R. p. 551, 552). No data was supplied by Hastings or any other witness as to the rate of air movement in either the Davis incubator at Brooklyn or the incubator installed at Muskogee. It may well be that one of the elements contributing to the failure of the Davis incubator was the suppression of the air movement by these fabric coverings. At Muskogee there were wooden partitions where these fabric coverings were in the Davis incubator and these wooden partitions had openings in them with dampers to regulate their size. So far as the record evidence goes, these dampers may have been so regulated as to make the rate of air movement substantially the same as that which occurred in the Davis incubator, and therefore one of the elements which contributed to the failure of the Muskogee incubator may have been this same lack of sufficient air flow.

The brief filed in connection with the Hastings application, referred to and quoted from in the Court of Appeals' opinion, supplies one item of more definite information on this particular point than is to be found elsewhere in the record. In this brief it is stated that the rate of flow of air through the egg chamber is 30 feet a minute (James

R. p. 756). This speed of 30 feet a minute or 1,800 feet an hour, or one-third of a mile per hour, is an exceedingly low speed. It is about one tenth of the speed at which a man normally walks. A movement of air at that rate would hardly be perceptible, would not overcome convection currents, and could not persist in current form through the eggs. That air movement is of such an entirely different order from the speeds which have been employed in the incubators which have attained commercial success as to justify the view that, with such a low speed of air flow, successful operation would be precluded no matter what was the construction of the incubator and no matter what was the method of operation in other respects. The records of these cases show that successful commercial mass incubation cannot be practiced with a speed of air movement of the general order of 30 feet per minute.

The record evidence on this matter of speed of air movement is that in the Smith and James incubators the average speed of movement of the air through the egg chambers is 135 feet to 142 feet per minute (James R. p. 474-5). In the Snow and Robbins (Waxham) incubators where no guiding means are provided for the air currents, the speed of movement of the air is approximately four times greater than in the Smith incubator (Snow R. p. 110; Waxham R. p. 303).

Thus, the summary of all this is that all that was done by Hastings as evidenced by his Brooklyn incubator, his Muskogee incubator and his application for patent with all the documents relating to it, was characterized by absence of two essentials of the Smith invention, namely, staged incubation, and a sufficient velocity of the air circulating through the egg chamber to accomplish the purposes and functions essential to successful mass incubation as specified in claim 1 of the Smith patent.

In the Davis installation there was no staged incubation, and the fabric coverings of the top and bottom walls of the egg chamber precluded air movement with sufficient velocity. In the Muskogee incubator there was likewise no staged incubation and no proof suggesting that the rate of air movement was at all greater than that employed at Brooklyn. In the patent application as filed there is no disclosure of staged incubation, and the illustration includes just such fabric coverings as were employed at Brooklyn.

Considering the brief filed by Hastings' attorneys as supplementing the disclosure of his application, the disclosure thus supplemented remains unchanged except that, as noted above, there is more specific statement that the rate of air circulation is definitely low, altogether too low to effect the desired purpose, and far lower than has ever been found effective in practice.

The drawing of the application shows but one egg compartment whereas reference is made in this brief to several egg compartments. This reference to several egg compartments must, therefore, have been reference to several egg compartments employed as Hastings employed them in the Muskogee installation where the arrangement of the eggs was not that appropriate for staged incubation, and all of the statements in the brief are consistent with that assumption.

Giving to the statements in the brief about the arrangement of the eggs in the several chambers any other interpretation involves applying to them the later acquired knowledge contributed to the art of incubation by Smith, and that is precisely what should not be done. Those statements should be read in the light of the knowledge then existing, that knowledge which left the art of mass incubation with an unsolved problem which workers in the art strove for years to solve before the real solution was ultimately attained by Smith.

THE HASTINGS APPLICATION CAN BE USED ONLY TO CORROBORATE OTHER TESTIMONY OF THE PRIOR USES.

After the filing of the brief, the Hastings application was rejected by the Board of Examiners in Chief, and the application was then abandoned.

It is well settled that an abandoned application for patent cannot be used to anticipate a later issued patent. This principle of patent law was stated by this Court in the *Corn-Planter Patent*, 23 Wall. 181, where it was said (p. 210-211):

> "Were it not for the application for a patent it would justly be regarded as an abandoned experiment, incapable of being set up against any other claim. Can the fact that such an application was made and afterwards voluntarily withdrawn, and never renewed, make any difference? We think not. Had a patent been actually granted to Remy & Kelly, it would have been different. The case would then have come directly within the seventh section of the act of 1836, which makes a 'patent' or a 'description in a printed publication' of the invention claimed, a bar to a further patent therefor. But a mere application for a patent is not mentioned as such a bar. It can only have a bearing on the question of prior invention or discovery. *If upon the whole of the evidence it appears that the alleged prior invention or discovery was only an experiment and was never perfected or brought into actual use, but was abandoned and never revived by the alleged inventor, the mere fact of having unsuccessfully applied for a patent therefor, cannot take the case out of the category of unsuccessful experiments.*"

The only bearing which this application can have upon the Hastings alleged prior use or prior invention is in substantiating (if it does) the testimony of witnesses as to

operations of the Hastings installations carried on contemporaneously with the several communications to the Patent Office (see *U. S. Blind Stitch* v. *Reliable*, 67 F. [2d] 327).

The abandoned application cannot be used to create a doubt as to the process which Hastings actually used, and then, having created this doubt, to resolve the doubt by concluding that the process used was something different from that referred to in the testimony. When, as in the instant case, the construction of the incubator and the process employed have been established by the testimony of witnesses and the contemporaneous publications, the abandoned application cannot be used to establish a different thing. Thus we find in the brief filed in the application that at certain points the evidence given by Lieber is confirmed, and at other points the disclosure is vague but not contradictory of Lieber's testimony. In such circumstances, the only permissible use of the application or documents filed in connection with it is in confirmation of the evidence, not in contradiction of it.

Instead of corroborating the statements of witnesses for respondents that Hastings practiced staged incubation at Brooklyn, or realized its value and importance, the application as filed contemporaneously with his Brooklyn experiments contains no disclosure of staged incubation. Instead of showing that Hastings then had a conception of current movement of air with sufficient velocity to accomplish the purposes of the Smith invention, the fabric partitions illustrated and described in the application as located at the top and bottom of the egg chamber would admittedly choke off any current of air.

The amendment of May 24, 1912, does not corroborate the use of staged incubation at Muskogee, for there is no disclosure of that step. This amendment nullifies the claim to successful use at Muskogee (or Brooklyn) for it speaks of "a painstaking and very costly series of experi-

ments" and says that "up to the present time, hatcheries of large capacity have proven to be practical failures."

The brief of December 20, 1912, gives no adequate description of setting eggs in staged incubation; it discloses inadequate forced draft; and for the reasons stated, it does not disclose the maintenance of constant air temperature for all ages of eggs.

The reference in the brief (James R. p. 752) to "a vast number of eggs subjected to the same temperature and atmospheric conditions best adapted for the development of the embryo", which the Court of Appeals quoted (Hall R. p. 406), applies to the Hastings' method for Hastings proposed to maintain a uniform temperature in each compartment containing 5,000 eggs, although the temperature of the several compartments was progressively increased.

On the next page, the brief writer referred to "eggs assembled in a single compartment and with eggs at all stages of incubation". This statement, also, is consistent with an operation in which the eggs in any one compartment are all of one age, and refers to progression of incubation in the several compartments. The statement immediately following that "the eggs in the later stages of development supply the necessary heat for the eggs in the earlier stages of development", applies equally well to the process which Hastings actually employed at Muskogee, for in that process the excess heat in one compartment in which the eggs are in a later stage of development is supplied to another or other compartments in which the eggs are in an earlier stage of incubation. It will be noted that this passage does not state or even suggest that the temperatures within the several compartments are the same. On the contrary, it is consistent with the method of operation which the evidence shows Hastings employed, namely, segregating the eggs in individual compartments according to their ages and carefully regulating the air inlets to the

several compartments to produce progressively increasing temperatures therein in accordance with the progressive stages of incubation in the compartments.

Thus these detached portions of the brief which have been thought to indicate the Smith process by some who have acquired knowledge of the Smith invention rather recently, do in fact relate to and describe the wholly different process which the evidence shows Hastings actually employed.

Positive support for this statement appears at other points in the brief. At the bottom of page 754 it is said:

> "Furthermore in the incubating process during the final stages of the development the external heat supplied must be greatly reduced."

This is true of the procedure employed by Hastings at Muskogee, but it is entirely foreign to the Smith process wherein there is no change in the amount of "external heat" applied, the same temperature being maintained continuously and applied at all times to eggs in all stages of incubation.

Again, on page 755, it is stated that

> "air is drawn positively through a circulatory system and may be modified at any point during its circulation."

This is fairly definite reference to the dampers at the top of the several chambers of the Muskogee incubator, whose function was to regulate the amount of air admitted to each chamber in order to maintain progressively increasing temperatures in the several chambers. In the Smith procedure there is no modification of the current at any point in its circulation.

It is impossible to reconcile these passages with the idea that Hastings then had any conception of the Smith pro-

cedure or that he disclosed in his application for patent a method or apparatus for incubating in accordance with the Smith invention. On the other hand, all the statements in the brief, like those in the contemporaneous documents, are consistent and have a definite meaning when applied to the procedure employed by Hastings at Muskogee as described by Lieber.

Furthermore, the proof of the matter is found in the failure of Hastings to achieve the commercial and practical success for which he was striving. If the statements in the brief were really descriptive of the Smith process, and if Hastings had in truth employed that process at Muskogee or anywhere else, he would have solved the problem of mass incubation. But, then, the disastrous termination of the Muskogee venture and the failure and abandonment of all Hastings' efforts, would be inexplicable. Nor would it be possible to reconcile Hastings' statement that six years later at Tiffin, Ohio, he "tried out a method of hatching very much more like the Smith-Buckeye device than I have used in the past" (James R. p. 577), with the view that he had used the Smith process at Muskogee and had disclosed it to others in December, 1912.

If Hastings had discovered in 1912 the principles of the Smith invention and the vital properties of staged incubation, he must have realized also the inadequacies of his pending application as a basis for a patent upon this process. Had all of the features of successful mass incubation been developed by Hastings at Muskogee, it is most probable that he would have filed a new application for patent thereon containing claims covering the invention. But he made no such application and presented no claim to what is now said to have been originated and practiced by him.

The claim which was presented to the Patent Office and rejected by the Board of Examiners in Chief, appears on

page 759 of the James Record.* It sets forth the Hastings proposal as he then conceived it. When analyzed, it is nothing more than the use of a power driven fan within an incubator. It contains no reference to staged incubation or to the utilization of the endothermic and exothermic properties of the eggs in the various stages of advancement in incubation.

Hastings had made no further progress than Smith had made in 1913 and 1914 before *he* conceived the idea of setting the eggs in "staged incubation" in a single chamber, subjecting them to the *same* body of air at the *same* temperature and increasing the current flow of air to accomplish the purposes set forth in Claim 1 of the patent. In rejecting the defense of prior use by Smith, this Court said:

> "At the time indicated he" (Smith) "used commercially an incubator arranged in three completely separated compartments in each of which was circulation of air by a fan. But there was no staged incubation in any single compartment" (*Snow* Case, p. 16).

So here, the gist of Hastings' application, embodied in the claim, does not anticipate the Smith patent for the same reason that Smith did not invalidate his own patent by the mere use of a fan in an incubator.

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*"A hatchery for eggs embodying an incubating chamber adapted for the reception of superposed trays for eggs to be incubated, whereby said eggs will be arranged in layers one above the other, means for effecting a distribution of air uniformly to the eggs in the chamber, means for heating the air, and mechanically operated means for forcing a uniform circulation of air through all parts of the chamber and past the heater, whereby convexion currents will be eliminated, temperature and gaseous stratification of the air in the chamber overcome, and the eggs subjected to the influence of air of the same temperature and composition."

Finally as to the brief filed with the Hastings application for patent, the statement by the Circuit Court of Appeals that "the attorney's brief does not represent a new idea but a clarification of an old one," is founded upon a wholly erroneous conception of what the "old" idea was. The true purport of the brief is to confirm the established fact that the "old" idea of Hastings comprehends no part of the novel idea of mass incubation contributed to the art by Smith.

POINT IV.

Under established principles of patent law the Hastings defense must be rejected.

Success Is Not Anticipated by Failure.

The annals of the patent law are crowded with examples of alleged prior uses and prior inventions which have been presented in their most attractive form as complete anticipations of successful patented inventions. Courts have repeatedly rejected and commented on such abortive efforts put forward with unsound claims to some real achievement and prolific excuses for the failure to achieve more, all in the effort to destroy valuable patent rights built on persistence, skill and inventive genius. Success made Smith a shining mark for the disgruntled and unsuccessful, who, having failed to achieve success, became obsessed with a desire to destroy that which they could not create.

A most striking resemblance to the situation here is found in the telephone cases. In those cases Bell was beset by the claims of many that they and not Bell had invented the telephone. Bell was forced to litigate his patent against plausible claims of prior inventorship and prior uses which bore much greater resemblance to his successful work than is found between Hastings and Smith. The experiences of the "prior inventors" and "prior users" who

were set up against Bell were colored with more evidences of success and the devices they made bore closer superficial resemblance to those of Bell than is true of Hastings in his relation to Smith. The closest approach to Bell was Reis who *almost* made the revolutionary invention of transmitting speech. In the words of this Court (126 U. S. 544-545):

> "It was left for Bell to discover that the failure was due not to workmanship but to the principle which was adopted as the basis of what had to be done. • • • Reis never thought of it, and he failed to transmit speech telegraphically. Bell did, and he succeeded. Under such circumstances it is impossible to hold that what Reis did was an anticipation of the discovery of Bell. To follow Reis is to fail, but to follow Bell is to succeed. The difference between the two is just the difference between failure and success. If Reis had kept on he might have found out the way to succeed, but he stopped and failed. Bell took up his work and carried it on to a successful result."

So, here, Hastings was striving for success in the same field as Smith. Perhaps he *almost* succeeded. *In fact* he did not. His failure was due to his inability to grasp *all* of the essentials of mass incubation, or his failure to put all of them together appropriately to form an operative whole. In his vacillations from scheme to scheme, he never arrived at the answer to the problem. His defeat and consequent abandonment of his incubator have no other explanation than a lack of realization of the invention.

Earlier in this brief we have referred to *Coffin* v. *Ogden* (18 Wall. 120). This is the leading case upon *near* anticipations and the pithy summary contained at page 124 cannot be improved upon:

> "If the thing were embryotic or inchoate; if it rested in speculation or experiment; if the process pursued for its development had failed to reach the point of consummation, it cannot avail to defeat a patent founded upon a discovery or invention which was completed, while in the other case there was only progress, however near that progress may have approximated to the end in view."

In *Consolidated Valve Co.* v. *Crosby*, 113 U. S. 157-179, this Court used language which is particularly apt:

> "Richardson's invention brought to success what prior inventors had essayed and partly accomplished. He used some things which had been used before, but he added just that which was necessary to make the whole a practically valuable and economical apparatus. The fact that the known valves were not used, and the speedy and extensive adoption of Richardson's valve, are facts in harmony with the evidence that his valve contains just what the prior valves lack, and go to support the conclusion at which we have arrived on the question of novelty."

No doubt the art, represented by Hastings, Lawry and the numerous patentees cited by respondents, was groping for the solution to the problem of mass incubation because ample reward for the solution was an obvious certainty, but it remained for Smith to achieve it. In the words of *Eibel Co.* v. *Paper Co.* (261 U. S. 45-68):

> "The fact that in a decade of an eager quest for higher speeds this important chain of circumstances had escaped observation, the fact that no one had applied a remedy for the consequent trouble until Eibel, and the final fact that when he made known his discovery, all adopted his remedy, leave no doubt in our minds that what he saw and did was not obvious and did involve discovery and invention."

Finally, we quote a recent publication "Invention and the Law", not merely because it was written by opposing counsel but because it states the rule concisely and clearly, and applies with peculiar force to the situation here. It was shown in the *Snow* and *Waxham* cases that Smith succeeded only after efforts extending over nine years, marked by successive financial failures followed by ultimate success. Hastings quit in his efforts after two years. Says this author, citing a host of authorities (p. 158):

> "The award for invention goes to the persistent and the successful. Those who almost accomplish an invention, but abandon it before final completion, are not inventors. Their labors cannot be used to show lack of invention on the part of another person who takes the same idea where the former inventor left off and is persistent enough finally to complete it and make it a success. It is the final inventive step that wins.
>
> "The extent of the inventor's efforts to accomplish his inventive act, the amount of money he spends in experiments, and the failures he encounters which he finally conquers, are all factors taken into consideration in determining whether the final inventive step that he takes, however small, is a step that constitutes invention because it brings final success."

Prior Invention and Prior Uses Must Be Established by Evidence Which Leaves No Reasonable Doubt of Their Existence and Efficacy.

Consider this well settled rule in connection with the outstanding features of the evidence submitted in support of the Hastings defense, including, among others, (1) the absence of contemporaneous record of eggs incubated and chicks produced in any operation of any Hastings incubator, (2) the absence of contemporaneous description in any satisfactory detail of either the construction or the method of operation of any Hastings incubator unless one assumes

that the abandoned patent application describes the Brooklyn (Davis) incubator, (3) the admission of exaggeration in the articles in the publications in evidence, (4) the discrepancies between the testimony of Hastings and other witnesses, particularly Lieber, (5) the discrepancies between the testimony of witnesses in these cases and the same witnesses in prior suits, (6) the discrepancies between the testimony of witnesses and the publications, (7) Hastings' admitted jealousy and resentment of Smith's success, (8) the great number of years which elapsed between the recollection testimony of the witnesses and the events about which they testified, and (9) the conclusions expressed by those judges who had the advantage of seeing and hearing Hastings and other witnesses for respondents when they testified.

This being the character of the defense proofs, the case presented is peculiarly one for application of the principles announced and applied by this Court in the *Barbed Wire Case* cited and quoted from above (*ante*, p. 14).

Other pertinent comment of this Court is found in the *Eibel* case, 261 U. S., where this Court said (p. 60):

> "The temptation to remember in such cases and the ease with which honest witnesses can convince themselves after many years of having had a conception at the basis of a valuable patent, are well known in this branch of law, and have properly led to a rule that evidence to prove prior discovery must be clear and satisfactory."

And in *Deering* v. *Winona* (155 U. S. 286-301) where this Court said:

> "Granting the witnesses to be of the highest character, and never so conscientious in their desire to tell only the truth, the possibility of their being mistaken as to the exact device used, which, though bear-

ing a general resemblance to the one patented, may differ from it in the very particular which makes it patentable, are such as to render oral testimony peculiarly untrustworthy; particularly so if the testimony be taken after the lapse of years from the time the alleged anticipating device was used. If there be added to this a personal bias, or an incentive to color the testimony in the interest of the party calling the witness, to say nothing of down-right perjury, its value is, of course, still more seriously impaired. This case is an apt illustration of the wisdom of the rule requiring such anticipations to be proven by evidence so cogent as to leave no reasonable doubt in the mind of the court, that the transaction occurred substantially as stated."

POINT V.

The respondents have used the Smith invention and infringed upon the patent.

Hall Brothers.

In the case of Hall Brothers (No. 35) there can be no question that infringement is present. These respondents are large and wealthy hatcherymen located at Wallingford, Connecticut, where they have for a number of years operated incubators identical in construction and mode of operation with the Robbins incubator involved in the *Waxham* case. This incubator consists of a closed cabinet containing many thousands of eggs set at semi-weekly intervals in staged incubation. The incubator has large fans on the rear wall of the cabinet, and restricted inlet and outlet openings for the interchange of limited amounts of fresh and foul air, all exactly as in the *Waxham* case, and the current movement of the air through the cabinet is identical with that employed in the *Waxham* incubators. This is testi-

fied to by petitioner's expert, Mr. Taggart, at page 44 of the *Hall* record, and is not disputed.

At the beginning of the infringement, Hall Brothers used the same #23 Robbins incubators of 23,000-egg capacities which were used by *Waxham*, together with some smaller #17's of 17,000-egg capacity, which, except for reduction in size, were the same as the #23's (Hall R. p. 39).

About 1931, following adverse decisions in the *Waxham* suit, of which respondents were promptly notified (Hall R. p. 42), they modified their practice by removing the eggs from the main chamber on the 18th day, and placing them in a separate chamber. By this change of procedure, the eggs which had reached substantial maturity were removed for the actual hatching of chicks.

The incubators which were used for the 18-day operations were known as the Robbins #26*. They are shown in the manufacturer's advertisement (Pltf.'s Ex. 7, Hall R. p. 120), and the interior construction is shown in Exhibits 4, 5 and 6 (Hall R. p. 117-119). In this incubator, the same tilting egg drum is used in which the eggs are placed at semi-weekly intervals so that there are in the racks a plurality of settings, ranging from fresh eggs to eggs which have progressed through eighteen days or 18/21sts of the entire incubating period. As the respondent Hall said with respect to this operation (R. p. 40):

> "Instead of hatching the eggs in the racks to the left" (as in the old 23's) "we simply put them in our new #10 hatchers."

It will be recalled that an egg passes from the endothermic to the exothermic phase on or about the 10th day (294 U. S. 4).

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*A Robbins #62 unit comprises two #26 incubators of 26,000 egg capacity and a hatching unit of 10,000 egg capacity to serve the two incubating units. (See Hall R. p. 120.)

Infringement is not avoided by the expedient of removing the eggs on the 18th day of incubation, for with this setting practice the eggs in the incubator are about equally divided between endothermic and exothermic eggs.

As stated by the respondent Hall (R. p. 77):

> "XQ68. That is to say, if you set all your eggs at one time in the 26 incubators, you would have them all reaching the heat generating stage at the same time, would you not? A. Yes.
>
> XQ69. And you would have them when you first started in all in the heat absorbing stage at the same time? A. Yes.
>
> XQ70. You have by your principle of operation of the 26, you have a balance or an attempt to balance those two properties of the eggs, you have some eggs that are absorbing and some that are heat generating in operating your 26? A. I believe so."

As the respondents in both cases (*Hall* and *James*) rely upon this eighteen-day defense, we will discuss it more fully at pages 82 to 86, *infra*. For the present, it suffices to say that, in the operation of the #26 Robbins incubators, Hall has used the process set out in Claim 1 of the patent in suit, and particularly as defined by this Court in the *Snow* case. Judge Hincks so held, saying (Hall R. p. 221):

> "The method used by the defendants in the use of all of the Robbins machines above specified involved the arrangement of the eggs at different levels in staged incubation in a closed chamber, having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture; the application to the eggs of heated air in a current created by means other than variation of temperature; the current of air being of sufficient velocity to circulate, diffuse and

maintain the air throughout the chamber at substantially the same temperature, whereby the air is vitalized, moisture conserved, and the units of heating carried from the eggs in the more advanced stage to those in the less advanced."

James Manufacturing Co.

In the *James* case, the principal respondent, James Manufacturing Company, is a manufacturing corporation having a plant and place of business at Elmira, New York, and has for many years been engaged in the manufacture and sale of incubators.

For many years prior to the infringement, this company was engaged in the manufacture and sale of the old, single layer, single setting, still-air incubators. It was a violent opponent of the Smith type of incubators, strenuously advocating "Nature's Way" as superior to forced draft incubation. The James Company would have none of the "staged incubation" and "forced draft" process, and fought the adoption of this system by advertisement and propaganda (James R. p. 58-60). In 1929, however it was compelled to abandon its former stand and come out with forced-draft-staged-incubation. The old style incubator was relegated to the background and used only during the last three days of the hatching period, whereas throughout the eighteen-day formative period of the embryo, the Smith invention was employed.

In the change over to the Smith method, the James Company copied the Smith process more slavishly than either Robbins or Snow, for it used not only the principles broadly stated in Claim 1, but also the more specific steps of process Claims 2 and 3 and even the detailed structure of Claim 5 of the patent.

The illustration on page 78, which is a reproduction of Exhibit 14 (James R. p. 684) shows the "Jamesway" incubator.

The incubator is a large cabinet with a door, shown on the left. Within the incubator are the superposed egg trays, in which the eggs are set at intervals of 3½ days (James R. p. 85-86) so that, when in operation, the incubator contains eggs in "staged incubation." At the top of the cabinet are large central openings through which the air is drawn from below by the rapidly rotating fan.* This fan is of the blower or impeller type and is encased between the upper and lower surfaces of the fan housing. It draws the air by suction from the cabinet and throws it out centrifugally over the heaters through the horizontal passages. On the back of the door and on the rear wall are located two vertical partitions forming corridors which receive the current of air delivered by the fan and guide it to the bottom of the chamber. The fan is run at high speed (550 to 860 R.P.M.), and the current of air moves downward through the corridors at approximately 700 feet per minute (James R. p. 90). The air then turns upwardly and moves through the trays and around the eggs in staged incubation at speeds averaging 135 feet per minute (James R. p. 475) and is again drawn into the fan and recirculated.

Near the top of the cabinet and at the level of the fan, are located four small holes, controlled by slides, through which a portion of the air is discharged. One of these holes appears at the upper left hand corner of the drawing. On the bottom of the incubator are openings through which limited amounts of fresh air enter the cabinet. Over these openings are located four revolving arms which run at relatively low speed (210-220 R.P.M.) and the purpose

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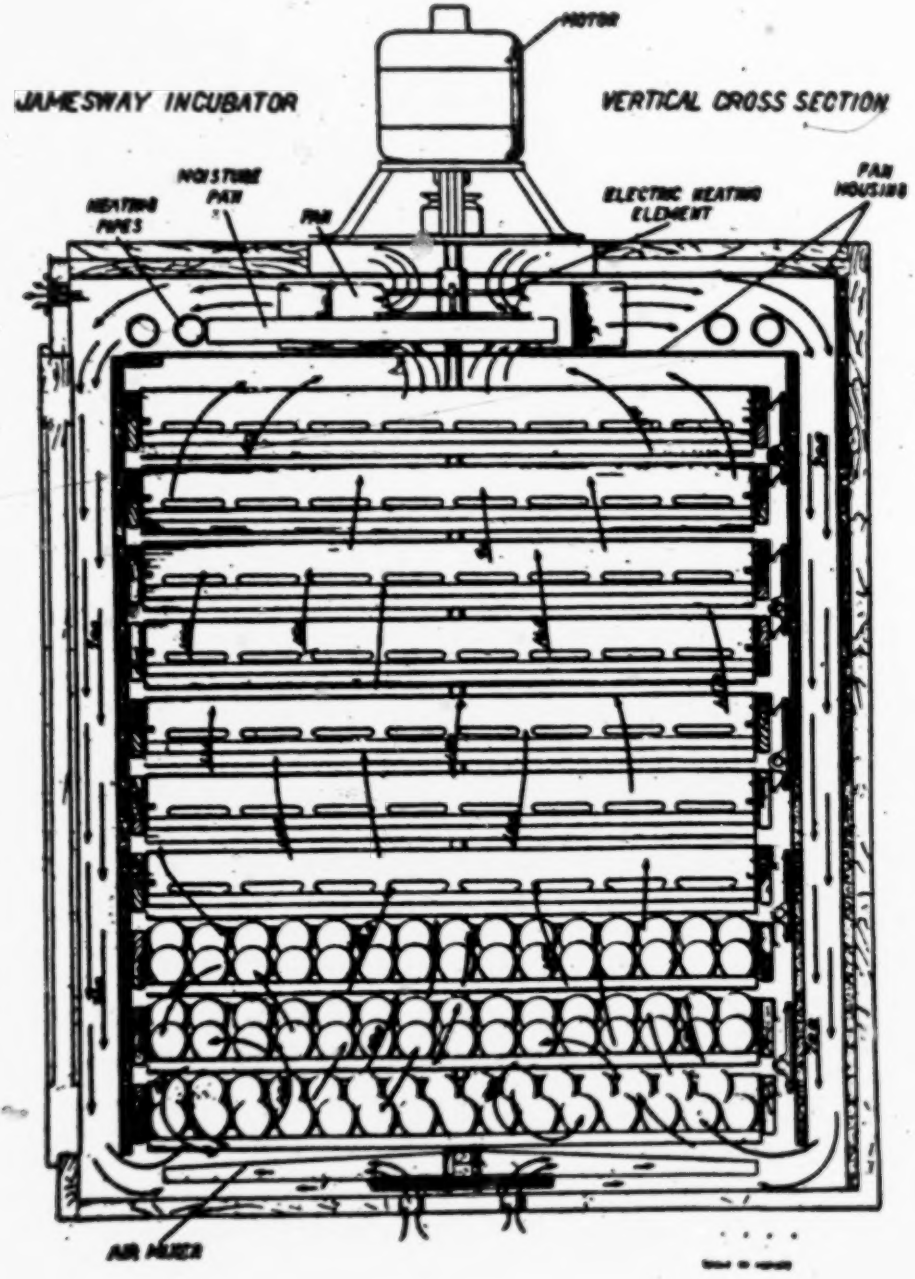
*Although respondents' expert was careful (except in three instances, James R. p. 206-207) not to call this instrument a "fan," it was repeatedly called a "fan" in respondents' instruction books and catalogues. (See James R. p. 94-95.)


JAMESWAY INCUBATOR
VERTICAL CROSS SECTION
MOTOR
HEATING PIPES
MOISTURE PAN
FAN
ELECTRIC HEATING ELEMENT
FAN HOUSING
AIR MIXER

of which is to mix the fresh, cold air into the stream as it enters the egg chamber and before it reaches the eggs.

Respondents have sought to concentrate attention upon this last named instrumentality and to minimize the upper fan. *It was thoroughly demonstrated that the upper fan is the dominant air moving instrumentality,* and that the effect of the "mixer" on the current movement of the air is negligible and localized to its immediate vicinity. This is apparent from the fact that the lower device rotates at a much reduced speed and the blades are slender sticks running in the open, while the upper fan runs at high speed, has eight broad blades, and is encased at the sides so that the air is forcibly drawn from the cabinet and thrown out centrifugally at high speed over the heaters and down through the corridors and into the cabinet. This fact is shown by the comparative charts, Exhibits 24, 25 and 26. Exhibit 24 (James R. p. 686-695) shows the current movement in the normal operation; Exhibit 25 (James R. p. 696-705) shows the movement with the upper fan only running, and Exhibit 26 (James R. p. 706-710) with the mixer only running. In this latter exhibit, the "air mixer" is shown to have no effect whatever in the top six trays (James R. p. 706). When the normal operation was conducted, the effect of the "air mixer" was overshadowed by the powerful current generated by the upper fan.

Taggart said (James R. p. 117):

> "Now, taking the movement of air through the machine, as a mass, the fan at the top of the machine is decidedly a dominating influence and the air mixer has very little effect upon the volume of air that is moving. It simply levels out the speed of the current through the bottom trays, and it also mixes, with that downward movement, the fresh air that is taken in at the bottom before it has an opportunity to contact any of the egg trays."

The District Court Judge observed the operation of the incubators and his conclusion was:

"Defendant's device is so constructed that the air is drawn upward through the tiers of egg trays to the top of the cabinet where it is thrown from the tips of the impeller blades toward the front and back of the compartment and carried downward through channels to the base of the compartment. At this point defendant has provided its device with a turbulator or agitator, a flat bladed rotating air mixer which revolves at a slower rate of speed than the impeller. The purposes are to mix the fresh air which comes in at the base of the machine into the flow of air within the machine so as to secure an even temperature throughout the compartment, and to break up the current of air so that as it rises through the tiers of egg trays it will have no defined path. In plaintiff's device the fresh air is mixed into the air flow of the machine by the propeller. This is impracticable in defendant's machine, because the impeller is at the top while the fresh air inlets are at the base of the machine. Experiments at the trial showed that the turbulator affected air currents in only a few of the lowest trays of eggs and that from that point upward the air flow tended to travel in definite paths" (James R. p. 1263).

In the Courts below, respondents argued that as the air moves at different speeds through the several trays, there cannot be a continuous current of air. This argument overlooks the fact that (except in a few isolated spots at the bottom of the cabinet) the air is all moving in the same direction. It also erroneously implies that in a current of air, the air must move at the same speed at all points. None of these variations in speed indicate that current movement of the air is not present.

This Court disposed of similar arguments of non-infringement in the *Snow* and *Waxham* cases, saying, in the *Snow* case (p. 19-20):

"That there is a mixture of the air and some confusion of its movement in the corridor, and that at

different levels within the space occupied by the tiers of trays the movement is not in the same direction, is immaterial. It is enough that there is a movement of air in current form following substantially defined paths through the tiers of egg trays, sufficient to effect the desired transfer of heat units. Claim 1 does not prescribe that a current of air is to be maintained throughout the chamber. It calls for the application to the eggs of a current of air 'of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature.' This respondents accomplish by the currents of air set in motion either directly or indirectly by the movement of the blades of the propellers. The method is that of Smith."

Finally, respondent James, in its catalogues, admitted that the air moves in a steady flow, in repeated cycles through the egg chamber, with "sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature", saying (James R. p. 97):

"The air rises uniformly between all the eggs in the entire incubation compartment, without the effect of a direct blast, but with a gentle upward movement. The rising air is drawn through two openings on either side, at the top, and again mixed in the impeller compartment and starts another complete circuit of the cabinet. *The rate of air flow is rapid enough to prevent differences in temperature at different points.*"

In the James incubator, the current movement of air is created by the suction effect of the upper fan, while in Smith the current is created by the pressure of the fans, as shown by the candle tests illustrated by the photographs (James R. p. 1182-1187). It is wholly immaterial to the question

of infringement whether the current of air is drawn or pushed because the claims do not make this distinction. The actual difference in pressures within the egg chambers in the Smith and Jamesway incubators is two-thousandths (.002) of an inch in barometric pressure (James R. p. 377), a difference in pressure such as is found in the atmosphere at levels two feet apart.

Claim 2 differs from Claim 1 in that the air currents are specified to be "power driven" and that the currents of air enter the egg chamber "through openings". It is plain that the Jamesway incubator has "power driven" currents of air which enter the egg chamber through the openings at the outlets from the corridors. Claim 3 calls for a "vertically directed" current of air, which is found in the Jamesway incubator. With respect to Claim 5, the spaced partitions on the door and on the back wall provide the corridors for conducting the stream of air from the fan to the egg chamber, and in all other respects the Jamesway incubator responds to the terms of this claim.

The 18 Day Defense.

Respondents in both cases have claimed that they did not infringe because they practiced the Smith invention for eighteen days only. They did not deny that they utilized the Smith process for eighteen days, but claimed that, as they did not use it for the remaining three days, they did not infringe.

If this contention were carried to its logical conclusion, the patent could be avoided just as well by removing the eggs at the twentieth day or even an hour before actual hatching begins.

Respondents claim that by removing the eggs to another compartment they reduce the spread of B. W. D. (bacillary white diarrhea) among the hatching chicks. There is nothing to this claim, for the embryos within the

shells are shielded by the shells in a Smith or any other incubator and, therefore cannot contract or communicate disease (James R. p. 338, 488). Thus, no benefit is secured by segregating hatched chicks and unhatched eggs.

All that respondents have done by removing the eggs at the eighteenth day is to utilize the Smith process to less than its fullest extent and to deprive themselves of the full realization of its benefits by sacrificing the heat generated by the eggs in the last days of incubation. But, as is shown by the heat charts (Hall Ex. 13, p. 126; James Ex. 3, p. 676), there is more heat generated by the eggs from the 11th to the 18th days than is necessary to supply all of the heat required for the eggs up to the eleventh day (James R. p. 47).

It is well settled that one does not avoid infringement merely by using the patented invention to less than the full advantage. As stated by this Court in the *Waxham* case (p. 23):

> "Petitioner does not avoid infringement of respondent's method patent merely by employing it in a machine of different structure than respondent's, whether more or less efficiently." (Citing cases.)

In *Sewall* v. *Jones* (91 U. S. 171, 183), the court said:

> "It is not necessary that the defendant should employ the plaintiff's invention to as good advantage as he employed it, or that the result should be the same in degree; but it must be the same in kind."

That the eighteen-day operation does not destroy the essentials of the Smith invention is shown by the following very pertinent quotation from the James instruction book (James R. p. 96):

> "Do not leave the cabinet full of eggs of the same age, as, after the tenth or twelfth day, enough animal

> **heat will be created so that you cannot keep this cabinet down to temperature."**

There is no verbal distinction to be found in the claims based upon the presence of the word "hatching". The word "hatching" in common parlance, has been used to designate the entire period of twenty-one days and is therefore synonymous with "incubating" (James R. p. 491-493; 328-9; 446-7). Scientifically, the word "hatching" may be used to indicate the actual emergence of the chick from the shell, but this is not the way the word is used generally or the way in which it is used in the patent. It is natural to say that the hen is hatching eggs during the whole time that she sits on the nest, and one would not maintain that during the first 18 days she was not "hatching" the eggs, but "incubating" them.

In the *Snow* case, this Court used the words in their general and accepted sense, as is shown by the following quotation:

> "the Smith Patent * * * for an improved apparatus and method for the *incubation* of eggs" (p. 3),

and

> "Only so much of the patent as relates to a *method for incubation* is now involved. Correct appreciation of the contentions made requires a brief exposition of the well-known phenomena which attend the *incubation* of eggs under natural conditions.
>
> The period for *hatching* eggs of the domestic hen is twenty-one days. The eggs are cold at the beginning of the period of *incubation*, although at that time generation has already progressed slightly. Continuation of this process and successful *incubation* depend upon the application of heat to the eggs, and the maintenance of their temperature at not less than body heat, about 100° F., and not more than 105° F. Any substantial

> divergence from this range of temperature results in deterioration or death of the embryo, and consequent failure of the *hatching* process'' (p. 3 and 4).

The claims call for a process of ''hatching'' in which the heat units are transferred from eggs in a ''more advanced stage'' of incubation to those in a less advanced stage. It is particularly to be noted that the comparative term ''more advanced'' is used, *not* the superlative ''most advanced''. This is significant because respondents insist upon a limitation of the claims to the transfer of heat from the eggs in the *most* advanced stage. In respondents' incubators, the complement of eggs is about equally divided between eggs in the heat generating or ''more advanced'' stage and eggs in the ''less advanced'' or heat absorbing stage. This is all that is required to effect a transfer of heat units from ''eggs in the *more advanced* stage of incubation to those in a less advanced stage.''

Neither District Court was misled by the attempt to avoid the Smith patent on the eighteen day defense. In the *Hall* case Judge Hincks said:

> ''I am unable to adopt such a stilted construction which would so narrow the disclosure of the claim as to deprive it of all value'' (R. p. 223).

And in the *James* case Judge Knight said (R. p. 1264):

> ''There is no question but that the defendant uses the method of the Smith patent up to the time that the eggs are removed to a separate compartment for the last three days of the incubation period and the emergence of the chick. The removal of the eggs previous to the completion of the incubation period will not avoid infringement, the defendant having used the principles of the Smith invention but to less than their full extent.''

The District Courts in these cases were in agreement on this point with other District Courts in the decisions appearing in the Hall record at the pages noted, as follows:

Judge Baltzell (D. C. Ind.), *Smith* v. *Sims* (R. p. 167);
Judge Joyce (D. C. Minn.), *Smith* v. *Street* (R. p. 172);
Judge Baltzell (D. C. Ind.), *Smith* v. *Johnson* (R. p. 176);
Judge Molyneaux (D. C. Minn.), *Smith* v. *Street* (R. p. 180);
Judge Vaught (D. C. Okla.), *Smith* v. *Hankins* (R. p. 185);
Judge Geiger (D. C. Wis.), *Smith* v. *Le Mieux* (R. p. 189).
Judge Tuttle (D. C. Mich.), *Smith* v. *Kribs* (R. p. 193).

POINT VI.

The Smith patent is not invalid because of insufficiency of disclosure.

In the *James* case, the usual assemblage of prior art patents was presented, but as these added nothing of substance to the art cited by the defendants in the *Snow* and *Waxham* cases, no comment on them here is required.

In the *Hall* case, respondent's counsel discovered a mare's nest in those parts of the specification of the Smith patent where the temperatures are set out. The specification of the patent recommends that the "temperature of circulating air should be such as will prevent the eggs in the early stage of incubation from falling below 100°" (p. 1, ls. 40-43), and again at line 78, page 2, the specification says that the temperature of the chamber should be "between the limits of 100° and 105°." It is quite evident from these two quotations that the patentee thought the temperature of the air and the temperature of the egg were the same. As stated by Taggart (Hall R. p. 47), this was the general belief of the time.

As noted below, approximately ten years after the issuance of the Smith patent, humidities were generally adopted which were considerably higher than those practiced at the date of the patent. This necessitated a modification of the temperature, so that instead of 100° F., 99° F. is now used with the modern humidity.

The suggestion that there is involved in the statement of temperatures in the Smith specification an attempt to conceal the process or to mislead or deceive the public is far fetched to the point of lacking all substance. The specification of the Smith patent contains directions which are amply sufficient and definite for the practice of the patented process if the humidities of 1918 are employed, a conclusion which is implicit in the opinions of this Court in the *Snow* and *Waxham* cases and those of all of the other courts which have passed upon the Smith patent.

The precise temperatures are not made essential requisites of the invention by the claim, and it is the claim, not the specification, which defines the scope of the protection afforded by the patent.

There is no element of novelty in this argument of counsel for the respondent Hall. The same matter of specific temperatures was the subject of discussion in the earlier stages of the *Waxham* suit (Waxham R. p. 604), though it was dropped completely later.

The facts of importance in connection with this matter of specific temperatures are simple and readily understood. The process of artificial incubation has been the subject of refinement and perfection of detail steadily ever since the grant of the Smith patent. One respect in which there has been such refinement and improvement is that the humidity within the incubator has been increased so that the eggs are incubated in a more humid atmosphere. With this increase in humidity, it has been found desirable or even necessary to reduce the temperature a very small

amount, that is, a little below the specific temperatures stated in the Smith specification and at the time of the Smith invention considered to be the temperatures most desirable for incubation. This is covered by the testimony of plaintiff's witness, Taggart, at pages 47 to 49 of the Hall record.

With the lower humidities used by Smith and by the art generally at the time of the Smith invention, the temperatures stated in the Smith specification were appropriate and the Smith process as so employed operated perfectly. Up to 1928 when the higher humidity came into general use, Smith and his licensee, The Buckeye Incubator Company, had operated successfully over a long series of years at temperatures within the range stated in the specification (Hall R. p. 49).

In the effort to support its contention on this point, counsel for Hall have attempted to make use of the statement of plaintiff's witness, Taggart, that

> "if you subjected eggs to such a temperature of air that they do not fall below 100° F. in the early stage or first ten days, it would be fatal to practically all of the eggs" (Hall R. p. 47).

without completing the quotation or otherwise calling attention to the fact that the statement was predicated upon "with our present knowledge and *present humidity*". The witness' meaning is brought out so clearly in the course of his testimony on pages 47 to 49 of the Hall record as to admit of no misapprehension and the District Court experienced no difficulty with it, as is shown by its Fact Finding No. 4 (Hall R. p. 214) and its third Conclusion of Law (p. 222).

All that is required of the patentee is that he shall give sufficient disclosure so that one skilled in the art can prac-

tice the invention.* Addressing himself to the skilled in the art at the date of his patent, Smith gave the proper instructions by which his invention could be successfully practiced. He did not envision that increased humidity would require a modification of his then instruction, and no rule of law requires such foresight.

CONCLUSION.

The foregoing comments on infringement and sufficiency of the Smith specification are submitted as a basis for rejecting contentions of respondent's counsel which were briefed and argued in the Court of Appeals but received no comment in the opinion of that Court. We are satisfied that there is no merit in them for the reasons pointed out and it may be that they will not be urged here.

The Hastings defense is the only matter of defense for which respondents have the support of any Court, and on that it is the support of only one Court of Appeals in a view opposed to the conclusions of two other Courts of Appeals and many District Courts, the latter including three wherein the trial Judges had the distinct advantage of observing and hearing the important witnesses.

This Hastings' defense presents no element of novelty. Instead, it is a commonplace and usual instance of attempting to make what was an obvious failure appear to be something of real consequence. The facts detailed in the foregoing establish that Hastings was one of those who tried

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*_Sun Ray Gas Corp._ v. _Bellows Claude Neon Co._, 49 F. (2d) 886 (C. C. A. 6);

Donner v. _Sheer Pharmacal Corp._, 64 F. (2d) 217 (C. C. A. 8);

Franc-Strohmenger & Cowan v. _Arthur Siegman, Inc._, 27 F. (2d) 785 (C. C. A. 2);

Standard Paint Co. v. _Bird_, 175 Fed. 346, aff. 182 Fed. 1023 (C. C. A. 2).

over a series of years and at various places to achieve successful commercial mass incubation and failed.

There can be no doubt but that Hastings failed. The end in view was the production of an incubator and a method of operation which could be used commercially for profitable operation. That goal was never reached by Hastings.

Throughout his work he was groping. That is indicated by the fact that each incubator he built was different from its predecessor. There was no *fundamental* conception underlying his efforts other than the employment in incubation of the principles of cold storage preservation and utilization of a fan for the circulation of air. Any constructive thought extending beyond those elementary principles is conspicuously absent from all that he did.

Each one of his several distinct efforts is strikingly similar to all the others. In each he built an incubator with entire freedom to develop all the ideas he had, unhampered by others. Each incubator was tried and found deficient. Each incubator was abandoned and then Hastings moved on to another point to make a similar abortive effort with an altered construction and method of operation but with no recognizable progress toward success.

At one time early in this series of attempts he thought that the ideas he had evolved on mass incubation amounted to invention and so he applied for a patent. The application was subjected to the usual examination in the Patent Office and was found to present no novel idea amounting to invention, so patent protection was refused and the application for patent, like the incubators Hastings built, became abandoned.

Thus in every respect, incubators, patent application and all, Hastings' efforts were failures which were as complete as any such efforts ever are. He never succeeded in getting beyond the stage of experimentation, and, with the discontinuance of his several efforts, what he did went into the category of abandoned experiments where they have remained ever since.

This summary of Hastings' efforts is in accord with the views expressed by all of the courts which have passed upon this Hastings defense excepting only the Court of Appeals in these cases.

Thus Judge Westenhaver said in the *Wolf* case:

> "It cannot be said that either his" (Hastings) "method or apparatus had passed beyond the experimental stage or solved the problem later solved by Smith. It does not appear that he has contributed anything to the ultimate solution of the Buckeye type of incubator" (*Buckeye, etc., Co.* v. *Wolf*, 291 Fed. 253, 258).

Judge Bodine said in the *Cooley* case (Appendix p. vii, viii):

> "The reasoning of the Hastings prior use is not persuasive against the patent. Smith never lost sight of results. Hastings never seems to have procured results. He built one sort of an incubator and the next year changed to another. The following year he built another kind of incubator and so on. Business success never followed his adventures. • • •
>
> "Hastings was and is boastful. Convincing proof of his alleged method and device is certainly lacking. Success never rewarded his attempts."

The Circuit Court of Appeals for the Third Circuit said in the *Cooley* case (17 F. [2d] 455):

> "Hastings and Smith, the patentee, no doubt saw the same incubating problems, but Smith pursued a solution directly opposite that of Hastings."

The Master said in the *Stone* case (Appendix, p. xix):

> "In view of the previous state of the art, it cannot be said that either Hastings, Lowery or Smith had

contributed to its advance until such time as they had described a method with sufficient clearness and precision to enable one versed in such matters to understand what the process was, and a practicable way to put it into operation. Neither the apparatus of Hastings or Lowery were practicable and did not meet the problem involved."

Judge Hincks in the *Hall* case at bar (p. 222) said:

> "Moreover, on the record submitted in this case, if the method of Claim 1 was in fact used at all, for aught that appears it was promptly forgotten, only to be recalled in connection with the litigation that followed the Smith patent. Such a use, contributing nothing to the store of human knowledge, does not negative novelty. *Gaylor* v. *Wilder,* 10 Howard 477; *Diamond Patent Co.* v. *S. E. Carr Co.,* 217 Fed. 400. Nor do the defendants negative novelty by proof of 'only a casual use, abandoned thereafter and never entering into the art until after the patent in suit was applied for',—in this case an interval of over five years. *Concrete Mixing Co.* v. *Powers-Kennedy Contracting Corp.,* 27 Fed. (2nd) 688."

The Court of Appeals presents in the instant cases the one view opposed to the concurring conclusions expressed in the foregoing extracts and in the action taken without further comment on the Hastings defense by the Court of Appeals for the Sixth Circuit, by Judge Knight in the *James* case, by Judge Baltzell in the *Sims* case, and by Judge Molyneaux in the *Street* case.

The Court of Appeals was led to adopt this erroneous view, we are persuaded from its opinion, by misapprehension of many of the pertinent facts. For instance they were led to adopt the view that the Brooklyn incubator was operated through two hatching seasons, when the fact is that it was operated only two months in one hatching

season (1911), and that the Muskogee incubator was operated through two hatching seasons whereas the fact is that it was operated in one hatching season (1912) only with one unsuccessful attempt by others than Hastings, and with only one setting of eggs, in the next season (1913). Also the Court of Appeals understood that the Muskogee incubator was a duplicate of the Brooklyn incubator though the fact is that they were radically different both in construction and method of operation.

The Court of Appeals appears to have been led to its erroneous view primarily by the Hastings application for patent and the documents filed in the Patent Office in connection with it. The facts that the application was found not to disclose novelty and was rejected by the Patent Office and was abandoned by Hastings, appear to have been disregarded as unimportant, and the brief filed by attorneys representing Hastings was given an entirely erroneous and unjustified meaning, whereas its proper meaning becomes apparent when one reads it in connection with what Hastings did at Muskogee shortly before the brief was written.

Most of all, the Court of Appeals failed entirely to give appropriate significance to the outstanding fact that the whole of Hastings' effort was entirely barren of successful achievement. It involved only loss of all the time Hastings devoted to it and all of the money invested in it by others. Of practical results in the production of revenue and in the commercial hatching of eggs for the public, there were none. In respect to these items there is striking contrast between Hastings and Smith, and this contrast is of vital consequence here.

Events in the history of mass incubation in the United States over the past 25 years about which there is and can be no dispute, make it as plain as it ever is that there was

no real contribution by Hastings and no advance whatever in practical incubation resulting from anything he did.

We respectfully submit that the decisions of the Court of Appeals in the present cases should be reversed, and the decrees of the District Courts reinstated.

Respectfully submitted,

CHARLES NEAVE,
DEAN S. EDMONDS,
ALBERT L. ELY,
Counsel for Petitioner.

Dated, September 25, 1936.

CHARLES ELMORE CROPLE
CLERK

Supreme Court of the United States

OCTOBER TERM, 1936.

Nos. 35 and 36.

SAMUEL B. SMITH,

Petitioner,

vs.

A. B. HALL and L. C. HALL, d. b. a. HALL BROTHERS,

Respondents.

SAMUEL B. SMITH,

Petitioner,

vs.

JAMES MANUFACTURING COMPANY and ELMIRA HATCHERIES, INCORPORATED,

Respondents.

APPENDIX TO PETITIONER'S BRIEF.

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ALBERT L. ELY,
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APPENDIX.

Filed April 23, 1925.

UNITED STATES DISTRICT COURT,

DISTRICT OF NEW JERSEY.

(Affirmed: 17 F. (2) 453)

THE BUCKEYE INCUBATOR COMPANY and SAMUEL B. SMITH,
Plaintiffs,

against

ELDEN E. COOLEY,
Defendant.

BODINE, District Judge:

This is a suit for infringement of the Smith patent 1,262,860 for a method and apparatus for hatching eggs on a large scale, and patent 1,263,138 for a specific construction of racks and egg trays for use in incubators of large capacity. The patents were held valid in the case of Buckeye Incubator Company and S. B. Smith against D. A. Wolf, reported in 291, Federal 253, affirmed Circuit Court of Appeals, Sixth Circuit, 296 Federal, 680.

This case is before this court on the same record as before Judge Westenhaver, except for the testimony of Milo Hastings with respect to his activities during the period from 1910 to 1918, and the testimony with respect to the Freas patent 1,165,958 for an improvement in a heating system for constant temperature baths in laboratory work.

Judge Westenhaver's decision was adverted to by the Circuit Court of Appeals as completely dispositive of the question of validity. He adverts to the testimony with respect to Hastings' alleged use in the following language:

"The evidence of his use or disclosure consists of four newspaper articles and his rejected application for a patent. The newspaper articles were published in the 'Dollar Hen' in the year 1909, in 'Poultry Culture' in February, 1912, in 'Boston Sunday Globe' November 10, 1912, and in the 'Technical World' in April, 1913. Of these articles defendant's expert says that the disclosures of the 'Poultry Culture' article are the nearest and most specific description of Hastings' use or construction. The earliest article in the 'Dollar Hen' may be disregarded, as Hastings there merely describes a process for maintaining temperature in cold storage and suggests how it may be applied in a hatchery. It does not purport to describe an apparatus or ever to have been put to any use. The other articles relate to two hatcheries said therein to have been constructed by Hastings, one at Muskogee, Okl., and the other at Port O'Connor, Tex. Whether either hatchery was a commercial and practical success cannot be discovered from the articles, and it is not proved by the evidence."

Generally speaking, Hastings' testimony added little to his published articles. After his book the "Dollar Hen" was written, he was employed by one Walter B. Davis, who had a small poultry farm in Brooklyn and constructed in the cellar an incubator of 6000 egg capacity, in the fall of 1910 or early in 1911. In the present day descriptions of this hatchery and the drawings now made, a complete anticipation is indicated. The surprising thing, however, about this Davis hatchery is that it was destroyed in 1913, when Davis went out of business and was never used to hatch more than 2000 eggs at one time. If the incubator had merit, it is improbable that it would have been destroyed so soon after its construction.

S. B. Smith holds an exclusive license to build incubators with a capacity of 25,000 eggs or over. The Buckeye Company, the assignee of the patents, had reserved to itself

the exclusive right to build incubators up to and including a capacity of 12,500 eggs. The holders of the entire rights under the patents are before the court as parties plaintiff, it is immaterial what rights they may have as between themselves if the patents be valid and infringed.

The specifications in the Smith patent 1,262,860, so far as pertinent are as follows:

> "The improved apparatus and method, is particularly designed for extensive operations wherein a chamber of large dimensions is adapted to contain thousands of eggs in separate trays arranged in tiers and the method of heating is such that the heated air is adapted to the eggs in various stages of incubation. There is a forced circulation of hot air through the chamber which is adapted preferably to maintain all eggs at temperatures between 100° and 105° Fahrenheit approximately and this improved system contemplates that fresh eggs will be placed in a horizontal plane, preferably by means of trays supported in horizontal planes, and after the eggs have been subject to the circulation of hot air for a predetermined time (the air circulating largely around the eggs) they will be placed in a tilted or inclined position in a different location but still subject to the same column of air and at this period of incubation they will be tilted in different planes at regular intervals during the time they remain in this latter position, and after they have remained for a predetermined time they will be again moved to a different position with reference to the forced circulation of hot air and so placed therein that the air will tend to keep the eggs below 105° temperature, and in this last named position the air will be forced to pass between the different eggs and will in effect act as a cooling medium for the eggs. The temperature of circulating air should be such as will prevent the eggs in the early stage of incubation from falling below 100° and the speed or velocity of the circulating air should be such as to carry the heat away

from the eggs in the later stage of incubation and thereby hold the temperature of those eggs at 105° or slightly below that. It is manifest that the temperature will remain practically the same throughout the column of eggs, but the air is impelled with sufficient velocity to carry the heat away from the eggs which happen to be in the advanced stage of incubation.

* * * * * *

As explained later the trays near the bottom are preferably arranged so that the air is forced to pass between the eggs in each tray thereby cooling or holding the temperature of those eggs down.

* * * * * *

It, therefore, appears that the improved apparatus and method contemplates the application of hot air circulating in a column with such speed as to keep the temperature substantially uniform and so arranging the eggs that the fresh eggs are placed at one point in the column of air and held in a horizontal plane until they reach a predetermined stage of incubation and then put at a different point in the same column of air and kept in planes inclined to the horizontal and thereafter placed at such a point in the column of air that the forced draft of air acts to hold the eggs at a uniform temperature and to prevent them from becoming overheated and thereafter placing the eggs into final position for the hatching operation."

All of the claims are in suit. The first three, as follows, probably embody the invention.

"1. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a current of heated air, said current being created by means other than variations of temperature

and of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified.

"2. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a power driven current of heated air in an adjacent chamber through openings into the egg chamber, said current being of sufficient velocity to circulate, diffuse and maintain the air throughout the egg chamber at substantially the same temperature whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified.

"3. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a vertically directed current of heated air in an adjacent chamber to circulate in said egg chamber through upper and lower openings between said chambers, said current being created by mechanically moving means of such velocity as to diffuse and maintain the air throughout the egg chamber at substantially the same temperature whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in the less advanced stage for the purpose specified."

It is said that the patent does not disclose with sufficient clarity the invention. Since, however, the Circuit Court of Appeals for the Sixth Circuit, has held the patent valid, it seems hardly necessary to go into the question of the sufficiency of the disclosure. There is little doubt, however, but that the patent expressly discloses the invention, so that it may be practiced by those reasonably skilled in the art.

The defendant, Cooley, knew about the litigation in Ohio. He procured, after that suit, a Buckeye incubator (No. 7), called in local carpenters and mechanics and built similar units. These units were all operated during the seasons of 1923 to 1925 inclusive. Infringement seems clear.

The tray patent No. 1,263,138 is merely a detailed patent pertaining to structural details and was held valid in the Sixth Circuit and seems to have been slavishly imitated by Cooley.

Smith is today operating an incubator with a million egg capacity. His gross sales, in 1925, were nearly a million dollars. His royalties from the Buckeye Company for 1925 were forty-two thousand dollars. It is estimated that the gross sales of incubators, embodying the invention, was in excess of one and three-quarter millions of dollars for that year. From the small beginning of a few years ago the business has grown to respectable proportions. Obviously, there is commercial success.

Of the prior art patents, a number were introduced showing means for ventilating rooms and drying vegetables and meats by means of forced drafts. The analogy is not at all clear. Other patents were introduced showing the principle of stage incubation and methods for providing for the escape of foul air. There was also the Freas patent No. 1,165,958 relating to heating systems in bacteriological incubators. None of the prior art patents, however, disclose the Smith arrangement or the Smith method, nor are they in the same art.

There is no testimony that any of the prior art patents were capable of hatching chicks. The cold storage patents, patents for aging cigars and for drying vegetables and incubating bacteria have no applicability.

The reasoning of the Hastings prior use is not persuasive against the patent. Smith never lost sight of results. Hastings never seems to have procured results. He built one sort of an incubator and the next year changed to another. The following year he built another kind of incubator and so on. Business success never followed his adventures. The testimony with respect to the construction of the Davis hatchery is not convincing. The kodak pictures offered in evidence disclose little. The drawings made on the eve of the present suit are, at best, Hastings' recollection of what he now fancies he did in 1911. It seems impossible that the methods disclosed in his drawings should not bear a resemblance to Smith's successful incubator rather than his failures. Had the Davis hatchery been a success there seems little reason to suppose that the money and time expended upon it should have forthwith been destroyed, and that Hastings should not have pressed his application for a patent. When he went to Muskogee the next year and built a hatchery, described in the Poultry Journal for February, 1912, he used another method. The Muskogee hatchery was a complete financial failure. Hastings says because of the poor quality of eggs and the low charge for hatching. The summer of 1912 found him at Port O'Connor, where a hatchery was built with a capacity of 150,000 eggs. By this time Hastings had discovered a means for turning eggs. At Port O'Connor, Hastings was not using hatching compartments open at the ceiling nor the means which he said existed in the Davis hatchery of having open outer door and free communications between the egg chambers and the outside corridor. Hastings undoubtedly had a greater measure of success, but it seems probable that he never had in com-

bination with a fan, restricted openings for foul air, eggs in different layers in a closed chamber and the currents of heated air so created as to diffuse and maintain the air throughout the egg chamber at substantially the same temperature, so that the units of heat were carried from the eggs in the more advanced stages of incubation to those in the less advanced stage.

Like many others in the course of his experiments he had various notions and various thoughts which he never embodied in a workable piece of mechanism.

Hastings' testimony adds only this to the Hastings' writings, that one is satisfied that his experiments were never in any definite direction and that he never achieved the point of successful operation.

Smith's alleged prior public use as recorded in Reliable Poultry Journal article of August 20, 1920, and the other publications with respect to his earlier work, might well be characterized as Judge Westenhaver did the Poultry Journal article as a flamboyant newspaper interview, in which a high degree of accuracy is not expected nor usually found. Smith and Hastings were working in different places for the same result, but there is nothing in the record to indicate that Smith, prior to his discovery, had placed his hand upon invention. He was sometimes boastful and his boasts were sometimes recorded in the public press, but there is nothing to show that he had placed in public use the patented device. Hastings was and is boastful. Convincing proof of this alleged method and device is certainly lacking. Success never rewarded his attempts.

The plaintiff may have a decree accordingly.

IN THE

DISTRICT COURT OF THE UNITED STATES

FOR THE DISTRICT OF OREGON.

THE BUCKEYE INCUBATOR COMPANY and SAMUEL B. SMITH,
Plaintiffs,

vs.

ARCHIE E. STONE,
Defendant.

REPORT OF THE MASTER-IN-CHANCERY.

To the Honorable, the Judges of the above entitled Court:

Pursuant to the decree of this court, made and entered on the 10th day of November, 1924, the undersigned Master-in-Chancery in and for said court and cause, submits herewith his report as follows:

In accordance with the provisions of the decree, and the practice of the court, the Master set said cause for hearing and required the defendant to render upon oath complete, definite, clear, and correct statements of account, as provided by Equity Rule No. 63, of the number of the incubators, and the capacity of each incubator made and used by him in violation of the plaintiffs' patent, and held to be an infringement thereof in this suit, containing the gains or profits made by him in the operation of the infringing incubators, and giving the dates and amounts of the sales of chicks incubated in the infringing incubators, and to submit for inspection all of the accounts, books, vouchers,

and records of every kind and description in which said data was originally entered, all accounts, books, vouchers, and records showing the cost of constructing the infringing incubators, and all records and documents relating to the operation and sales of the product resulting therefrom, and complete drawings and detailed descriptions properly verified, of any and all incubators then in use or theretofore used by him, built subsequent to the bringing of this suit and claimed by him not to be an infringement of plaintiffs' patents, making a full and complete disclosure of the construction and operation thereof, together with the number of chicks incubated therein, with detailed statements of the cost of operation, the dates and amounts of sales, and profits and gains made therefrom.

The defendant having made it to appear, by affidavit, that on December 23, 1924, all of his buildings, including all the incubators and hatching devices, were totally consumed by fire, and that he was not then making or using any incubators, or parts upon which the plaintiff has or claims patent, and that by reason of said fire he was unable to procure the necessary drawings and detailed descriptions disclosing the construction of the incubators complained of in plaintiff's complaint, the hearing was postponed, and thereafter the defendant made showing by affidavit which is made a part of this report, marked Exhibit I. Thereafter, and on July 24th, 1925, upon motion of the plaintiffs, the Master set said cause for hearing, to be held on August 12, 1925, and issued an order making similar requirements of the defendant as hereinbefore set forth.

Thereafter hearings were had before the Master, the plaintiffs appearing by Messrs. Border Bowman and Ralph C. King of solicitors, and the defendant appearing in person and by Mr. David E. Lofgren, his solicitor; testimony was adduced from witnesses called by both parties, by exhibits made a part of the record, and by depositions

duly taken upon commissions, all of which are submitted and made a part of the Master's report, and which are hereinafter scheduled and identified.

The Master's report, for convenience and to avoid confusion, is divided into two parts, as follows: the first, relating to the assessment of damages upon the machine which was admittedly an infringement of plaintiff's patent, and second, relating to the question of infringement, based upon the subsequent machines built and used by the defendant, and assessment of damages by reason thereof.

The Defendant's First Three Machines.

The capacity of the defendant's first machine was 4480 eggs, and the Master finds that it was used by the defendant for making at least two hatches. Thereafter, and prior to the decree, the defendant built and operated two other machines, one having a capacity of 3200 eggs, and the other having a capacity of 12,800 eggs. The defendant produced no books or records showing the cost, receipts, profits, gains or losses, and his oral testimony upon this subject is vague and unsatisfactory. The Master does not feel warranted in relying upon it. There is competent and undisputed testimony that a reasonable royalty for the use of a machine embodying the essential elements of plaintiffs' patent is ten cents per egg capacity, and the Master finds that such sum is a reasonable royalty. It appears, however, that before the manufacture and use of the second and third machines, the defendant destroyed his first machine and used the material thereof, at least in part, in the manufacture of the succeeding incubators. A deduction of the capacity of that machine should be made from the joint capacity of the second and third machines, i. e., that 16,000 less 4480, or 11,520 egg capacity.

The Master finds that as to the first machine, the plaintiffs are entitled to decree against the defendant in the sum of $448.00.

The Master finds as to the second and third machines that the plaintiffs are entitled to decree against the defendant in the amount of $1152.00.

Defendant's Present Incubators.

As to the incubators now in use by the defendant Stone, as well as the second and third machines, he makes strenuous claim that there is no infringement, and bases his claim upon the following information:

1. That the plaintiffs' patent is invalid.

2. That it has been anticipated by Milo C. Hastings in 1912 and 1913 at Muskogee, Oklahoma, and by R. C. Lowery at Pacific, Missouri, and by previous patents issued in analogous arts.

3. That its only patentable feature is a central corridor with egg chambers on one or both sides, down which corridor the heated air is forced vertically, escaping into the egg chambers at the bottom, striking the eggs and being circulated around them up to the heating chamber at the top, where it is reheated, again caught by the fan, and the cycle repeated.

4. That with the exception of the first machine which was dismantled, Stone works upon a very different principle, in that while he has a heating chamber and a forced circulation of air, he blows the heated air directly upon the eggs and does not use a central corridor, and that the air is not driven down in a vertical direction, but is driven in a horizontal direction, directly through the upper chamber or chute, and when it reaches the far end of this chute it circulates downward to a second heating chamber, is caught by a second fan there, and is blown again in a horizontal but opposite direction through the second egg chamber or

chute to the far end, where it ascends in the first heating chamber until caught by the first fan, and the cycle is repeated.

He further claims that by reason of his horizontal circulation of the heated air he obtains what he calls a variable temperature in each chute, and that the temperature of the air in the upper part of each chamber is higher than it is along its floor, and that by changing the trays from top to bottom he subjects the series of eggs in the same stages of incubation to a variation in temperature, which he claims is similar to that used by the humble hen, and results in stronger and healthier chicks.

In order that the problem presented in this suit may be more readily appreciable, a brief statement of the history of incubation should be made. The art of artificial hatching is not new. It was successfully practiced by the ancient Egyptians, but not until recent years had any method been devised whereby huge quantities of eggs could be incubated in a comparatively small space and in superimposed layers more than two in number. Buckeye Incubator Company vs. Wolfe, 291 Fed. 253.

The difficulties presented arose from the fact that in the process of incubation the egg generates animal heat and absorbs oxygen, and gives forth carbon dioxide, and therefore the eggs in the inner tiers would become over-heated and not properly revitalized by fresh oxygen. The problem then which faced Smith, Hastings, and Lowery was not to furnish heated air so that one or two layers of eggs would hatch, but was how to furnish and apply heated air and moisture to thousands of eggs in tiers in such a manner that the temperature would remain approximately the same throughout the entire mass, the foul air expelled, and fresh air and moisture admitted, giving to the eggs in the center of the column the same conditions as those at the ends and sides of the column.

Smith claims that he is the first man to have successfully done so; Stone contends that both Hastings and Lowery had achieved the desired results prior to the time that Smith claims he invented and perfected his device.

Before considering and reporting upon the validity of Smith's patent the Master will consider whether or not Stone's incubator infringes upon Smith's patent. The essence of both devices is that they have suitable outlets for the escape of foul air; suitable apertures to bring in fresh air; both avoid the fatal effect of "hot spots" in the column of eggs by the use of a confined rapidly moving current of air, and both get the best results by placing eggs in the highest state of incubation at a point in the incubator where the air from the fan will strike them before heating the eggs in the lower stages of incubation. Both require means whereby after the air has passed through the column of eggs, it will be returned to the heating chamber for reheating and be again propelled by fans in the stated cycle.

If Smith's machine was placed on its side there would be no essential difference between his apparatus and Stone's except that Stone places eggs in both corridors. The only function of the center corridor of Smith's incubator is to permit two egg compartments to be heated by the same column of air, and to provide a working space within the machine for handling the eggs.

Neither Smith nor Stone could operate their incubators except by two chutes or corridors. It is apparent from Stone's testimony that he could not operate his incubator by placing the eggs in both chambers were it not that he has two heating chambers and two fans, one at the end of the top chamber and the other at the opposite end of the lower chamber. The only difference in result claimed by Stone is that he claims to create a variation in temperature between the top and bottom of each chute. The tests made by the plaintiffs, after due notice to the defendant of the time and place where they were held, upon a machine

in all practical respects identical with Stone's, do not disclose any appreciable variation, and the Master is not impressed by the testimony of the defendant that such a variation exists or that it has any effect whatsoever upon the results obtained. Stone claims that he obtains exceedingly healthy and vigorous chicks by reason of this variation, but there is no evidence that they are stronger or more vigorous or in any way superior to those hatched by the Smith incubator. In fact, it appears from the testimony that Stone's ideas on incubators have been the result of a study of the Buckeye Incubator, which is licensed from Smith, and that Stone has been engaged in a readily apparent attempt to use the principles, methods and means disclosed by Smith and to avoid the effect of his infringement through trifling and immaterial changes. Both machines operate by means of currents of air which descend and ascend; in both the current of air is forced down vertically; in both it ascends vertically. The length of the ascending and descending columns do not affect, in the slightest degree, the operative value of the principle.

Mr. Stone uses all of the elements of the Smith machine, and merely changes their location in a way which neither produces a definite nor a better result. He, therefore, is guilty of an infringement.

The Master finds that the principles and elements of the Stone incubator are in all essential respects identical with those of the Smith incubator, and that he has infringed upon Smith's patent, if Smith's patent is valid.

The next and more difficult question is whether Smith was anticipated by either Hastings or Lowery. Hastings' machine was operated in 1912 and 1913. It consisted of a series of enclosed egg chambers, over the top of which ran a chute having a small opening into each chamber. Along the bottom of the chambers ran a second chute having openings from each chamber. The heating device was placed in a separate chamber adjacent to the egg chambers,

and the air forced by means of a fan therein into the upper chute, escaping from the apertures in the chute into the chambers and from the chambers into the lower chute and then returned to the heating chamber, and the action repeated. Shutters or doors were placed so that the heated air could be excluded from any one or more of the chambers. The first device installed by Hastings did not confine the heated air in any chute, while in the second it was closely confined and had very limited openings. In the first device, according to the testimony of S. J. Ward, not over five percent of the fertile eggs hatched. By means of the latter device forty to fifty percent of the fertile eggs hatched, but the hatchery was not a success, and Hastings did not discover any means to overcome the defects which were inherent in the apparatus. In fact, Hastings asked Mr. Ward, "Why don't this thing hatch?" to which the witness answered "Milo, I don't know, unless it is the acid or effect of the paper that you are using to line it." John G. Lieber, who was financially interested in the Hastings hatchery, testifies that hatches of about fifty percent were obtained. It is apparent, however, that Lieber was interested and more or less hostile with the hope that at some stage of the litigation of Smith's patent and the infringement suit brought by the Buckeye Incubator Company against Cooley, he might receive a return of the money he lost in the Hastings venture. His knowledge of Hastings' machine is dependent upon memory, his knowledge of the operation is rather vague, and the fact remains that the device was abandoned and it was not a success. Out of the four persons whom Lieber claims were satisfied customers, three of them testified that the hatchery was a failure. O. S. Dierfield, who attempted to operate it after Hastings abandoned the project, found that the machine worked successfully when only partly filled, and unsuccessfully when running to capacity. Hastings' later effort at Tiffin, Ohio, in 1917, also resulted in hatches of not over

fifty percent, and the project was abandoned. His efforts in Port O'Connor, Texas, were abortive, and the hatchery was never put in operation.

Lowery operated a hatchery at Pacific, Missouri, as late as June, 1917. His modes of operation were almost identical with that of Hastings. The hatchery was abandoned in 1917 and there is no evidence that it was an operative success.

The efforts of Hastings and Lowery were matched by the efforts of the patentee Smith, commencing in 1906 at Lykens, Ohio. All of them were experimenting with the forced circulation, none of them were successful, and the main reason for their lack of success seems to have been that they had not yet struck upon the fact that there must be sufficient force to the circulation to carry the heat from the eggs in the higher stages of incubation to those in the lower stages, thus in effect cooling the former and heating the latter. but they attempted to force the air into the chambers by openings which were too small, which resulted either in insufficient circulation or if the pressure from the fan was sufficient to give circulation, the rate of speed would be so high as to unduly deprive the eggs of their moisture and thus prevent a successful hatch. They had not discovered that in addition, there must be outlets for vitalized air and inlets for fresh air of sufficient size to furnish the hatching eggs with enough oxygen for successful incubation. The three men were experimenting along the same lines, having in many respects the same ideas, but they were only experiments. The problem which they were endeavoring to solve was not to invent a process or device by means of which some of the eggs could be hatched in tiers, for it is apparent from the history of the art and the experiments of all three, that this was possible, but their problem was to discover a process, device and means whereby a sufficiently large proportion of the eggs so placed in such an incubator could be hatched, and virile, healthy chicks obtained.

The evidence clearly shows that even with a faulty circulation of air, even with insufficient ventilation, and even with the development of "hot spots" in the center of the column of eggs, a varying percentage of the eggs in the column would hatch. Until, however, that percentage could be increased so that the results of the operations would render a profit to the hatchery, the problem was not solved.

The Master finds from the testimony that at least fifty percent of the fertile eggs placed in the incubator must be hatched before the operation passes from the debit to the credit side of the ledger. This, Hastings had not succeeded in doing, either in Muskogee, or in his later experiment at Tiffin. Both of his attempts were failures and were abandoned, and the fact of such failure and abandonment is cogent proof that he had not solved the problem with which he had been confronted.

There is no evidence in the record as to the percentages of hatches obtained by Lowery's method. It was abandoned in 1917, although the reasons for the termination of the enterprise do not appear. The evidence of the witnesses of the plaintiff and an examination of the sketches of the apparatus indicate that he had progressed practically as far and no farther than had Hastings and Smith up to the time that Smith perfected and patented his device.

The Master is not unmindful of the fact that it is not required of an inventor that the machine, device or process as disclosed by the drawings and specifications be a commercial success, but it is essential that it be an operative success, i. e., that in practice it will do what it is intended to do and perform and bring about the results which will constitute a material advance of the art.

In the Telephone Cases, 126 U. S. 536, 31 Law Ed. 863, the Supreme Court prescribes the test to be applied:

> "The law does not require that a discoverer or inventor, in order to obtain a patent for a process, must have succeeded in bringing his art to the highest de-

> gree of perfection. It is enough if he describes his method with sufficient clearness and precision to enable those skilled in the matter to understand what the process is, and if he points out some practicable way of putting it into operation."

In view of the previous state of the art, it cannot be said that either Hastings, Lowery or Smith had contributed to its advance until such time as they had described a method with sufficient clearness and precision to enable one versed in such matters to understand what the process was, and a practicable way to put it into operation. Neither the apparatus of Hastings or Lowery were practicable and did not meet the problem involved.

Hastings and Lowery may be said to occupy the same position in the art of incubation that Reis occupied in transmitting sound by means of electrical current. And the Supreme Court in the case last quoted says:

> "It is not contended that Reis had ever succeeded in actually transmitting speech, but only that his instrument was capable of it if he had known how. He did not know how and all his experiments in that direction were failures. With the help of Bell's later discoveries in 1875, we now know why he failed."

It may be said of the Hastings and Lowery machines that by changes which would permit the free passage of heated air into the chambers and egress from them, and by providing sufficient means for the expulsion of foul air and the admission of fresh air, they would be capable of doing what Smith accomplished. But they did not, and neither Hastings nor Lowery were capable of discovering the defects and remedying them. Smith did, and as said in *Proudfit L. L. Co. vs. Kalamazoo L. L. B. Co.*, 230 Fed. 120:

"It may have been under their very eyes, they may almost be said to have stumbled over it; but they certainly failed to see it, to estimate its value and to bring it into notice. Who was the first to see it and understand its value, and to give it shape and form and bring it into notice and urge its adoption * * *. Now that it has succeeded it may seem very plain to any one that he could have done as well. This is often the case with inventions of the greatest merit."

In this case Smith saw it, Smith gave it shape and form, brought it into notice and urged its adoption. We may wonder that Hastings and Lowery did not see what was wrong but the fact remains that they did not, and their machines were failures and were abandoned. When it is remembered that the very object of Hastings, Lowery and Smith was to devise a process and apparatus which would hatch enough eggs arranged in columns, tiers, and layers that would pay the costs of the operation, and of the eggs put into the incubator, and in addition give a reasonable margin of profit, it cannot be said that any invention had in fact been made, or any advance in the art achieved until that result had been accomplished. This, Hastings never was able to do and the evidence does not show that Lowery's incubator was any more successful than that of Hastings and it was abandoned.

The Master finds, therefore, that neither Hastings nor Lowery anticipated Smith.

The last question to be considered is whether the patents cited by the defendant in other arts are analogous and anticipate Smith.

The defendant has submitted to the Master the following described patents which he claims anticipate one or more of the claims of novelty made by Smith:

No. 559,676	T. R. C. Christianson
916,454	V. C. Koons
1,137,752	Geo. E. Goldstein
525,967	F. G. & A. C. Sargent
691,837	V. S. Bell
779,759	A. H. Berry & E. C. Woodward
206,389	Thos. Clegg
143,912	S. R. Kerby
1,244,429	Nicola D. Agostino
173,016	C. N. & E. A. Jones
211,821	Jas. H. Wickes
477,856	J. W Doty
544,785	J. H. Gore

Christianson's patent, 559,676, is a device for storing eggs and an apparatus for turning them so as to keep them fresh. The purpose and function of the device is to turn trays of eggs arranged in tiers by a single mechanical operation so that the yolk will be changed in its position in the albumen and remain embedded therein and not adhere to the shell. Smith makes no claim in his patent to have discovered that it is necessary to turn the eggs which are being hatched. That is as old as the art itself. The practice is carried on by the hen (see Testimony of Stone). It is recognized as being necessary in any kind of an incubator and in those having but a single layer of eggs it is done by hand. All that Smith claims upon the matter of turning the eggs is that he has a simple device whereby the entire tier can be turned in a single operation by means of a device which he patented. Smith's method and device is entirely different from Christianson's, and there is no anticipation there. It is further to be remembered that the defendant Stone in the instant case has abandoned and dismantled the turning device, and it is not claimed that the defendant in his later machines has infringed upon that device, in fact he turns each tray of eggs by hand, lifting them out of the incubator, turning

the frame and re-inserting in the case. Christianson's device is not adapted nor intended for incubation, and the art is by no means analogous, nor would an examination of the patent or the apparatus therein described suggest to a mechanic its adaptability as an incubator. The Buckeye Incubator Company vs. Wolfe, 291 Fed. 253, 264.

Koons' patent, 916,454, is for an incubator. It is apparent that it would be suitable only for a single layer of eggs, and it would be utterly impracticable to use the apparatus for hatching eggs in multiple tiers. It provides for an inlet for fresh air and an outlet for heated air, but there is no means provided for a forced circulation. In fact, it is apparent that the purpose of the inlet and outlet was not for ventilation but to provide a natural circulation, the heated air after passing around the eggs escapes at the top and its place taken by the fresh air admitted from the bottom. The circulation is obtained by reason of the difference of the weight and density of the heated air over that of the colder, heavier, fresh air. In other words, in an air tight room there would be no circulation of air; by opening the top of the windows at one end and the bottom of the windows at the other end, a circulation throughout the room would be obtained. Incidentally, if the incoming air were fresh, ventilation as well as circulation would result, but so far as Koons' patent is concerned the object of the inlets and outlets was to obtain circulation and not ventilation. The Master finds that Koons' patent is not an anticipation of the Smith patent.

Each of the other patents cited are either of drying fabrics, food products, or evaporating fruit, or aging cigars. Their very purpose is entirely different from that sought by Smith in incubation. The evaporators of the dryers remove moisture, the object of Smith and all other manufacturers of incubators is to conserve moisture; the use of any one of those apparata as an incubator would result in a flat failure, nor can it be said that they are in analogous art, and if Smith had studied each device and had finally

come to the conclusion that by making changes and adopting part of the principles or all of the principles and the elements of the various devices, they could be used in incubation, he still would have invented a process and means of carrying the process into execution.

The Master finds that none of the patents cited anticipate Smith.

Assessment of Damages on the Present Machine.

Having found that the Smith patent is a valid patent, and that the machines now used by Stone are an infringement of that, the Master passes to the question of assessing the damages. In view of the unsatisfactory showing by Stone as to the number of eggs hatched, the prices obtained, the cost of operation, the difficulty of arriving at any accurate estimate of profits and gains derived by Stone, the Master feels obliged to resort to the reasonable royalty heretofore found, and to assess the damages against Stone by that basis.

It appears from Stone's testimony that the egg capacity of his present machine is 100,000 eggs (Stone—Direct—page 42).

The royalties upon that capacity would be $10,000.00, but inasmuch as the plaintiffs in their brief make claim for $5,200.00, the Master assesses the damages with regard to the present machine at $5,200.00.

The Master does not believe that the facts or circumstances in the case warrant a recommendation that the damages be increased by the Court as provided for in the statute.

The Master transmits with his report the following records and documents:

1. Transcript of testimony taken before the Master, together with exhibits 1 to 9 of plaintiffs, and A to J of defendant.

2. The deposition of Wm. H. Hopple.

3. The deposition of Samuel J. Ward.

4. Deposition of Rees Hicks.

5. Depositions of George Cugley and L. C. Sturgis.

6. Depositions of L. A. Corey, F. J. Anderson, R. F. Schanafelt, John G. Lieber, Huston A. Hogan, and L. W. Pitts.

7. Depositions of S. B. Smith, C. R. Jenney, and Joseph I. Taggart.

8. Deposition of O. F. Deerfield.

9. Copies of patents referred to in report and cited by defendant.

10. Brief of plaintiffs.

11. Brief of defendant.

12. Reply brief of plaintiffs.

The Master recommends that decree be entered in favor of the plaintiffs and against the defendant in the sum of $448.00 upon his first machine, the sum of $1152.00 on the second and third machines, and the sum of $5,200.00 upon the present machines now used by the defendant, and that the plaintiffs further have and recover of the defendant their costs and disbursements.

The Master's fees and compensation have not been paid, and the Master respectfully prays the Court that the amount thereof be fixed in such sum as your Honors may deem proper. The Master will make such further and other reports as may be necessary in the premises.

Respectfully submitted,

(Sgd) Robert F. Maguire,
Master-in-Chancery.

(1936 Ex. C. R. 105)

IN THE EXCHEQUER COURT OF CANADA.

Between:

HIS MAJESTY THE KING,
on the Information of the
Attorney-General of Canada,

Plaintiff,

No. 16188 and

THE SMITH INCUBATOR COMPANY and
THE BUCKEYE INCUBATOR COMPANY,

Defendants.

ANGERS, *J*.

Judgment rendered January 29, 1936.

This is an action instituted in the name of the Attorney-General of Canada to impeach a patent of invention number 217,777 issued to Samuel B. Smith on April 18, 1922, for an alleged new and useful improvement in incubators.

The defendant Smith Incubator Company is the owner of said patent as assignee of said Samuel B. Smith and the defendant The Buckeye Incubator Company is a licensee.

The action seems to me properly instituted under section 37 of the Patent Act, R. S. C. 1927, chap. 150 (now section 60 of the Patent Act, 1935, 25-26 Geo. V. chap. 32) and subsection (b) of section 22 and subsection (b) of section 30 of the Exchequer Court Act; the mode of procedure is regulated by rule 11 of the General Rules and Orders of this Court.

The grounds of invalidity raised in the particulars of objection may be briefly stated as follows:

* * * * * *

Schedule 1 above mentioned contains a list of 19 American patents and one German patent as well as a list of various publications and it refers to several prior uses, particularly that of Milo M. Hastings, of Muskogee, Oklahoma, commenced in 1912.

Copies of seven of the nineteen American patents and a copy of the German patent were put in evidence; they form part of a binder marked as exhibit 2.

Of the publications mentioned in schedule 1 only pages 103 to 107 of "The Dollar Hen," a book written by Milo M. Hastings and published in New York in 1909, were filed; although included in the binder exhibit 2, these pages were numbered as exhibit 3. Other publications, however, not enumerated in the list contained in schedule 1, were filed by consent, comprising three pages of a work intitled "Artificial Incubating and Brooding" whereon appears an article dealing with "The Origin of the Cyphers Incubator," three pages of the journal "Poultry Culture," of Topeka, Kansas, of February 1912, containing an article under the caption "The Mammoth Incubator out-mammothed," two pages of the issue of April 1913, of the review "Technical World" containing a short item entitled "Hatching chickens by wholesale" and an article by Wm. H. Day, lecturer in physics, on the subject of "Humidity in relation to incubation," published in the Bulletin of the Ontario Agricultural College of Guelph in March 1908; all these publications are included in the binder exhibit 2. In addition to these there were filed photostatic copies of an article entitled "Largest chicken hatchery in the world in Muskogee" (exhibit 8) and of an article entitled "A 60,000 egg incubator" (exhibit 10); there is no indication as to when and where the former was published; the lat-

ter appeared in the issue of November 1912 of "Popular Electricity Magazine."

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A patent bearing number 1,262,860 was issued in the United States on April 16, 1918, to Samuel B. Smith, assignor of the Canadian patent 217,777 to the defendant The Smith Incubator Company; no copy of the American patent was produced, it being admitted that it is word for word the same as the Canadian patent.

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The publications on which the plaintiff relied to prove anticipation and common knowledge are the following:

The Dollar Hen, a book written by Milo Hastings and published in New York in 1909, pages 103 to 107, the chapter entitled "Incubation—The future method of incubation," filed as Exhibit 3;

Poultry Culture, published in Topeka, Kansas, issue of February 1912, pages 7, 14 and 15, containing an article by Ralph H. Searle, associate editor, bearing the title "The Mammoth Incubator out-mammothed" and the subtitle "How Milo Hastings, a Kansas product, is startling the world with his big chick factory" (included in binder exhibit 2);

Technical World, of April 1913, pages 248 and 249, on which appears an article by George F. Paul, intitled "Hatching chickens by wholesale" (included in binder exhibit 2);

Artificial Incubating and Brooding, published by The Reliable Poultry Journal Publishing Company, November 5, 1898, at Quincy, Ill., pages 108, 109 and 110, containing an article under the caption "The origin of the Cyphers incubators" (included in binder exhibit 2);

An article entitled "Humidity in relation to incubation" written by Wm. H. Day, professor in physics, published in the Bulletin of the Ontario Department of Agriculture, Ontario Agricultural College, Guelph, Ont.;

Various articles and photographs dealing with the incubator built by Milo Hastings at Muskogee, Oklahoma, in the fall of 1911 and spring of 1912.

In his article "The Dollar Hen" Milo Hastings foresees the possibility of large hatcheries and describes summarily the plan of a new type of incubator. The description, which is rather indefinite, refers particularly to a process for maintaining an even temperature and for regulating the air moisture in the different parts of the hatching room. Concerning temperatures the description merely says that its "regulation is by means of air heated (or cooled as the case may be) outside of the egg rooms and forced into the egg rooms by a motor driven cone fan, maintaining a steady current of air, the rate of movement of which may be varied at will." Further on, with regard to air moisture, the article says: "The means by which the air moisture is regulated is similar to that used in up-to-date cold storage plants where the air is made moist by sprinkling and dried with deliquescent salts. The regulation of vapor pressure, like that of temperature, may be by electrically moved dampers which switch a greater or less proportion of the incoming current to the sprinkler or dryer as the case may be." It seems obvious to me that, although Hastings had, at the time he wrote his book, realized the necessity of regulating the temperature and the moisture in the incubator, he only had a vague notion of the manner in which this end could be attained. I think that Hastings' book, in so far as common knowledge of the art is concerned, may be disregarded.

The definition of the Hastings incubator contained in the article of Poultry Culture, viz. "The Mammoth Incubator out-mammothed," although somewhat more detailed and accurate than that found in the chapter of The Dollar Hen dealing with incubation, is not definite nor specific enough to permit one skilled in the art to reproduce the incubator in question. Besides the process of air circulation as well

as the method of turning the eggs differ materially from those used in the Smith incubator. I do not think that the article in question can be considered as anticipatory of the patent in suit.

The same remarks apply to the article which appeared in the Technical World of April 1913 under the heading "Hatching chickens by wholesale." As the previous one it refers to a current or draft of air driven by a centrifugal fan through the egg chamber, the purpose of which is to keep it at an even temperature throughout. The article alludes to an improvement by which "compartments holding 10,000 eggs are swung on a pivot and the eggs turned by inverting the entire compartment," but the manner in which this so-called improvement is operated is not clearly disclosed; whether it resembles the method used in the Smith incubator is impossible to say.

* * * * * *

Coming now to the objection based on prior use, I may note forthwith that the evidence adduced in this connection deals exclusively with the alleged prior use of Milo Hastings, commenced in the year 1912.

Hastings was called as witness by plaintiff and in support of his testimony filed as exhibits, in addition to the article on incubation in The Dollar Hen, three plans or drawings of the incubator he built in Muskogee, Oklahoma, in 1912 (exhibit 4) and a photostatic copy of the record of the United States Patent Office relating to his rejected application for a patent for a hatchery for the eggs of domestic fowl filed on May 3, 1911 (exhibit 5). This application was not filed as a publication as it was not published, a rejected application in the United States being treated as a secret document; it was filed to show Hastings' conception of his alleged invention immediately prior to the erection of the Muskogee hatchery in 1912.

It is perhaps not inexpedient to quote the material part of the description included in the specification; it helps to show what Hastings had in mind:

"My invention is that of a hatchery in which I secure better ventilation and a more uniform temperature throughout the hatching chamber by substituting a forced draft for gravity drafts. * * * * * I believe it to be best to cause the air to enter the hatching chamber from above, but my invention is not limited to any particular circulation or movement of the air as, by the use of the fan, the gravity drafts may be overcome and the air caused to move in any desired direction.

Ventilation I secure through cracks around the door of the hatching chamber or other small openings in any part of the air circuit. The air being constantly in motion requires less rejuvenation than dead air.

The part of my incubator that is new, and which has not been used in connection with hatching devices, is that of the fan, and this I maintain to be of distinct utility in securing uniform ventilation and an even temperature throughout all parts of the hatching chamber."

The original claim in the application read thus:

"The combination, in a hatchery for the eggs of domestic fowl, of a chamber for holding eggs to be incubated and a mechanical device with moving parts for causing a circulation of air in or through such chamber."

The claim having been rejected an appeal was lodged before the Board of Examiners-in-Chief; for the purpose of appeal a new claim was substituted in the following terms:

"A hatchery for eggs embodying an incubating chamber adapted for the reception of superposed trays for eggs to be incubated, whereby said eggs will be arranged in layers one above the other, means for affecting a distribution of air uniformly to the eggs

in the chamber, means for heating the air, and mechanically operated means for forcing a uniform circulation of air through all parts of the chamber and past the heater, whereby convexion currents will be eliminated, temperature and gaseous stratification of the air in the chamber overcome, and the eggs subjected to the influence of air of the same temperature and composition."

The decision of the primary examiner was affirmed by the Board of Examiners-in-Chief by a majority of two to one, and the application of Hastings accordingly rejected. The decision of the Board finally disposed of Hastings' application, which was thereafter abandoned.

It may be noted that the dissenting Examiner-in-Chief expressed the opinion that Hastings' claim was patentable.

I must say that the specification contained in the application of Hastings is rather indefinite and that it discloses little, if any, information which was not already known.

I will now turn my attention to Hastings' testimony and indicate succinctly the features thereof which may offer some interest.

Hastings said he became interested in incubation when only a boy through reading an article entitled "How to build an incubator." He built a small incubator and experimented with it. His interest in incubation persisted throughout his course at school, where he spent his spare time in reading all the books, bulletins and other publications dealing with incubation, on which he could lay his hands. Shortly after leaving school he entered the Agricultural College, where, until his graduation in 1906, he was in charge of the poultry work. In 1908 he was employed as a poultry man in the United States Department of Agriculture. Early in that year he was sent to investigate the cold storage industry of eggs and chickens. As a result he became interested in the problem of the control of humidity of eggs in cold storage rooms and he engaged in a scien-

tific study of the measurement and control of humidity and in this connection invented an instrument, patented by the Department of Agriculture, called a cold storage evaporometer.

During his study of the cold storage of eggs he became familiar with certain methods in which, for the equalization of temperature in cold storage rooms, a fan system of air circulation was in use. He read a book relating the story of Cyphers' attempt to build and operate a room hatchery. Witness identified the article "The Origin of the Cypers Incubator" taken from the work "Artificial Incubating and Brooding" as a copy of an article contained in the book in question, after which he continued his story; I think I ought to quote here the following passage of his deposition (p. 39):

> "Being familiar with these efforts and being conscious of the need for economy of space and improvements in the art of incubation, when working upon the cold storage industry in which a system was in use of fan circulation of air in a chamber to equalize heat and also to control humidity, it occurred to my mind that the essential problem of incubation upon a large scale involved the same series of natural conditions and natural laws, the circulation of air, the equal distribution of heat and control of humidity; and, therefore, that except for the essential difference in temperature between 32 degrees and approximately 100 degrees or a little more, the physical condition or the physical laws that would control them were the same. Therefore, if you could equalize the temperature of eggs when holding them cold, but at a definite temperature with a fan, it occurred to me why not put the fan in and do the same thing for an incubator with the same large room structure and superimposed trays."

For reasons immaterial herein Hastings made no effort to carry on the idea. He completed the work to which he was assigned in the Department of Agriculture, wrote his book "The Dollar Hen" and resigned from the Department, with a view he says, to try to develop his conceived system of large room incubation with the use of a fan.

Hastings then speaks of the incubator he built in the winter months of 1911 for one Walter B. Davis who owned a poultry farm in the suburbs of Brooklyn. As plaintiff is not relying on this particular prior use, nothing would be gained by wasting any time in dealing with this incubator. According to witness, the machine was not advertised.

In the late fall of 1911 we find Hastings in Muskogee, Oklahoma, where, with the financial assistance of a local lawyer and real estate owner of some means, he is erecting a room incubator. Hastings operated this incubator during the hatching season of 1912.

Three plans, marked A, B and C, were filed as Exhibit 4. They are diagrammatic drawings prepared by an artist under the supervision of Hastings a couple of days before the trial.

Plan A shows a floor plan view, plan B a side sectional elevation and plan C an end sectional elevation.

Hastings' incubator consisted of a series of enclosed egg chambers—seven according to plans A and B (indicated thereon by figure 1)—over which was a passage (No. 10 on plan B). The air was impelled by a fan or blower (No. 6 on plans A and B) placed in a separate room (No. 5 on plan A) adjacent at one end to the egg chambers, through a passage (No. 7 on plan A) situate at the rear of the egg chambers, into another passage (No. 8 on plan A) adjoining at the other end the egg chambers and in that passage upwardly through the heating apparatus (No. 9 on plans A and B) into the passage (10) over the egg chambers previously referred to. At the top of the egg chambers were openings leading from this passage (10) to

each of said chambers; at the bottom of the chambers were other openings leading to a passage (No. 12 on plan B) located underneath the chambers; the air thus passed from passage (10) into the egg chambers by the openings aforesaid and then escaped from the egg chambers into the lower passage (12); the air was then returned to the fan or blower and the same movement was repeated indefinitely.

In front of these egg chambers was a room (No. 2 on plan A) into which the chambers opened. Each egg chamber had a panelled door which was not hinged but set up and buttoned and could easily be removed. There were slides or shutters to close the openings from the upper passage (10) into the egg chambers so that the heated air could, if desired, be excluded from any of the chambers.

The proof discloses that Hastings had first installed an exhaust fan to create circulation; it did not give sufficient pressure and it was replaced by a blower (dep. Hastings, pp. 44 and 45). The egg chambers were made to contain large trays, 24 by 48 inches; these trays had screen bottoms with special millwork slides. An egg chamber contained twenty trays, each holding 250 eggs; the capacity of a chamber was accordingly 5000 eggs. Seven chambers gave total capacity of 35,000 eggs. Owing to the shallowness of the trays it was not convenient for the hatch to come off, so that the plan was to use the space for two trays at hatching periods. Allowing for this the capacity in reality did not exceed 30,000 eggs. The plant in fact was advertised as being of a total capacity of 30,000 eggs (ibid., p. 46).

Hastings said that ventilation was assured by the fact that the heater was a gas flame burning in the bottom of a vertical pipe; to support its combustion it had to draw in and consume a steady stream of air. This gas burner was operating in the closed incubation circuit; this resulted in a steady exchange with outside air; air was drawn out

and had to be replaced; it was replaced by air leakage through cracks in doors or other accidental openings. To obtain further ventilation, if required, the door to the room (5) where the fan or blower was located could be opened.

Speaking of the control of moisture, Hastings stated that his method of adding moisture to the air was to place cans of water in room 5 at the point where the air would be drawn over them when coming out of the passage (12) under the egg chambers (ibid., p. 50).

Asked if he turned the eggs and, if so, how, Hastings replied that they were turned by hand (ibid., p. 51).

No provision was made for the escape of air by valves or otherwise, as there was a steady escape through the heater (ibid., p. 51).

Hastings succeeded in hatching eggs in his incubator at Muskogee, as established by Hastings' own deposition (pp. 51 and 52) and that of Hickox (p. 104) and by the photographs filed as exhibit 7; his success, however, was only fair; financially the undertaking was a failure (dep. Hastings, pp. 52 and 54).

At page 52 of his deposition, Hastings summarizes the hatching record of the Muskogee incubator as follows:

> "The hatching records as a whole for that plant were not high and there were many individual cases of very poor results. I should judge that the hatching record of the whole would run around 40 per cent."

The depositions of L. W. Pitts, L. A. Corry and Richard Shanafelt taken on Commission show extremely poor results for which, however, Hastings may perhaps not be solely responsible.

Speaking of the commercial success of the enterprise, Hastings says (p. 54):

> "It did not meet its operating expenses during the season I was operating it."

The witness ascribed his financial failure to two causes; the low cost at which the hatching was done (one cent per egg) and the incidental expenses of a new venture (p. 54).

The Muskogee hatchery ceased its operations at the end of the hatching season of 1912 and never resumed them.

In the middle of the summer of the same year Hastings went to Port O'Connor, Texas, to build a large incubator for one E. T. Powers; the plant was never completed and was abandoned.

After a careful study of Hastings' experiments, I have reached the conclusion that they do not constitute an anticipation of the patent in suit. His apparatus and process differed from Smith's in many particulars. I may say incidentally, however, that I am inclined to believe that Hastings had conceived something involving novelty and in consequence patentable.

* * * * * *

The United States patent No. 1,262,860, which is identical to the patent in suit, was the subject of a considerable amount of litigation in the United States; it was declared valid in, among others, the following cases: *Buckeye Incubator Co. v. Wolf* (12), affirmed (13); *Buckeye Incubator Co. v. Cooley* (14); *Buckeye Incubator Co. v. Petersime* (15); *Buckeye Incubator Co. v. Blum* (16), affirmed (17); *Buckeye Incubator Co. v. Hillpot* (1), affirmed (2); *Buckeye Incubator Co. v. Miller Hatcheries, Inc.* (3); *Boling v. Buckeye Incubator Co.* (4), reversed on other grounds (5); *Waxham v. Smith* (6); *Smith v. Snow* (7), reversed on question of infringement (8); *Smith v. Jensma* (9).

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* * * *

(12) 291 Fed., 253.
(13) 296 Fed., 680.
(14) 17 Fed. (2nd), 453.
(1) 22 Fed. (2nd), 855.
(2) 24 Fed. (2nd), 341.
(3) 41 Fed. (2nd), 619.
(4) 33 Fed. (2nd), 347.
(5) 46 Fed. (2nd), 965.
(15) 19 Fed. (2nd), 721.
(16) 17 Fed. (2nd), 456.
(17) 27 Fed. (2nd), 333.
(6) 70 Fed. (2nd), 457.
(7) 70 Fed. (2nd), 564.
(8) 294 U. S., 1.
(9) 1 Fed. Supp., 999.
(10) 17 Fed. (2nd), 453.

Although I am not bound by these decisions, I have given them due consideration. As observed by counsel, if these decisions do not constitute precedents, they contain very able reasoning by judges learned in the law. The inconvenience, however, is that it is difficult, not to say impossible, in most of these cases to ascertain what evidence was adduced against the validity of the patent. In some of the cases the endeavours and experiments of Hastings were relied upon, wholly or partly, by the party seeking to impeach the patent, as evidence of the state of the prior art; in other cases they seem to have been ignored or disregarded. Again in some of the cases Hastings was examined as witness and in others he did not appear. It would be difficult and somewhat hazardous in the circumstances to found an opinion upon these decisions. Nevertheless the judgment of the Circuit Court of Appeals, Third Circuit (10) which, on the question of the validity of the United States patent, confirmed the judgment of the District Court of New Jersey (unreported), is of some assistance. It appears from the report that the public uses relied on included, among others, Hastings' early work in 1908, Davis' hatchery, Hastings' application for a patent, Hastings' Muskogee hatchery and Hastings' Port O'Connor hatchery. Hastings moreover testified. Woolley, *J.*, who delivered the judgment of the Circuit Court of Appeals, made the following observations:

> "Hastings and Smith, the patentee, no doubt saw the same incubating problems, but Smith pursued a solution directly opposite that of Hastings. He, too, set eggs in trays arranged in tiers and enclosed them in a chamber and he also provided artificially heated air by a motor driven fan positioned at the top of the chamber, but he established an air current and regulated its direction by arranging the tiers of trays in two columns parallel with and separated from each other so as to form between them a central corridor

and placed partitions or curtains from the top to a short distance from the bottom of the tiers and directed the air current downwardly not through the eggs but through the corridor where it mushroomed on the floor, spread beneath the tiers, ascended through the egg trays and escaped through definitely arranged air outlets. By so controlling the current of heated air Smith claims, and we think correctly, that he is enabled to attain uniformity of temperature in its movement, first, through the old heat radiating eggs, and next, as it ascends, to the newer heat absorbing eggs, it being necessary that the temperature of the former should be maintained at a point not higher than 105° and that of the latter at a point not below 100°. Moreover, instead of drawing out trays to turn the eggs and then shoving them back, the trays are tilted in a fashion and to a degree simulating the egg turning movement of the hen. We think this arrangement involves invention. There is not only a marked but an intelligent difference between Smith's conception and the prior art and it is the difference between success and failure, or at least between success and feeble advances. It is not a great invention, yet it is one that solved a problem and it solved it in a new way and with such utility that it has become a commercial success which, measured by the amount of sales made and royalties paid, is really remarkable."

These remarks appear to me right and appropriate.

However it may be, I have, not unhesitatingly I must admit, reached the conclusion, based on the evidence adduced before me, that the patent in suit is valid.

There will be judgment declaring the patent valid and dismissing the action.

The defendants will have their costs against plaintiff.

CHARLES ELMORE

Supreme Court of the United States

OCTOBER TERM, 1936.

Nos. 35 and 36.

SAMUEL B. SMITH,

Petitioner,

vs.

A. B. HALL and L. C. HALL; d. b. a. HALL BROTHERS,

Respondents.

SAMUEL B. SMITH,

Petitioner,

vs.

JAMES MANUFACTURING COMPANY and ELMIRA HATCHERIES, INCORPORATED,

Respondents.

REPLY BRIEF FOR PETITIONER.

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REPLY BRIEF FOR PETITIONER.

The Issue Now Presented.

There is but one real issue presented here, *i. e.*, the validity of the Smith patent in view of the Hastings incubators, publications, and patent application. Arguments of non-infringement are presented, but they are arguments which were considered and rejected by this Court in the *Snow* and *Waxham* cases, except for the so-called "18-day" de-

fense which is so devoid of substance as to require only brief comment.

As to validity, the Smith patent has been before the Courts substantially continuously since 1923 and its validity was sustained in every instance up to the Court of Appeals' decision in the present cases. The *scope* of the protection afforded by the patent was the subject of differing Court decisions, with the result that the patent came before this Court for final determination of its scope in the *Snow* and *Waxham* cases. In deciding that issue of scope, this Court reviewed the art of incubation, determined the stage of evolution to which the art had progressed prior to Smith, ascertained and defined the nature and essentials of the Smith invention, and commented on the revolutionary effect which the Smith invention had upon the practical art of incubation. Thus, while the *Snow* and *Waxham* cases presented to this Court only issues of infringement, the determination of those issues led to declaring the Smith patent valid. This Court stated that Smith's method was novel and involved invention, that Smith was entitled to and received broad claims, and that those broad claims were entitled to a liberal construction.

This striking and revolutionary change in the practice of the art of incubating was defined by this Court as consisting of the combination of arranging the eggs for staged incubation as defined in the opinion* and applying to the staged eggs mechanically circulated currents of air of sufficient velocity so that in passing over eggs in different stages of incubation the temperature of the eggs throughout the chamber would be equalized, combined with gradual replacement of foul air with fresh air so that the essential moisture of the eggs is conserved.

The invention lies in the *combination* of these elements in a single operation. The omission of any one element

*"Staged incubation is the successive setting of eggs *in the same cabinet* at brief intervals, of about three days" (Snow opinion, p. 5).

defeats the purpose. If the eggs are not set in a single room in staged incubation as defined by the Court, a preponderance of hot (or cold) eggs will create conditions which any amount of air in circulation cannot remedy. If the eggs are set in staged incubation, and the air current is insufficient, failure will follow. And if the amount of fresh air entering the incubators is not restricted, failure will come from excessive drying out of the eggs.

The issue of *validity* now presented is whether or not the striking revolutionary advance in the art brought about by the invention so defined was made by Smith or by Hastings.

General Principles Bearing on this Issue.

It would seem that if an invention of such importance and effecting so revolutionary a change had been made by Hastings, some distinctive and easily recognizable manifestations of practical achievement would be apparent in the history of Hastings' efforts. Instead, the most distinctive feature of Hastings' efforts, individually or collectively, is their utter failure to attain anything of commercial significance. Not only once, but in three separate efforts he tried to build and operate a commercially useful incubator, and each effort was a failure and was abandoned because it was a failure. Nothing whatever of commercial value evolved from any one or all of them, and such investment as was made in each instance was lost in its entirety.

Nothing approaching explanation for the failure of these three successive efforts has been offered. For instance, there is no suggestion that Hastings' opportunities for demonstration of the value of his ideas was limited by inadequate funds. It appears that in each instance he was free to build as he wanted to build and operate as he wanted to operate, subject to no restrictions by reason of cost or by the desire of others to have their ideas incor-

porated. Thus each of his three incubators gave Hastings full opportunity to demonstrate achievement in mass incubation and their failure demonstrated that nothing had been achieved.

No contemporaneous records are now presented of eggs hatched in Hastings' incubators from which one could deduce that some measure of success was secured. Incubators which would hatch eggs were then known and in wide use. Possible improvement lay in hatching on a larger scale, or at less cost, or with a larger percentage of chicks from the eggs treated. No contemporaneous record of results obtained along any one of these lines has been presented, and the oral testimony given from memory ten or twenty years after the event is vague and variable, does not touch on cost of incubating, and asserts no improvement in percentage of hatch.

No contemporaneous record of the construction or operation of the Hastings incubators has been presented dealing with the critical items entering into the invention under consideration. The only contemporaneous drawing of any kind illustrating the construction of a Hastings incubator is that of the Hastings application and it shows a construction by which the air currents would be effectively suppressed. As filed there was no mention of staged incubation and in the subsequent papers there is no adequate description of that essential.

Hastings himself tried to operate each of his three incubators in the practice of mass incubation and he failed. Each effort to operate was confined to a short period, whereupon Hastings departed and shortly thereafter the incubator was abandoned and dismantled. Practical results of any value whatever were conspicuously absent.

An application for patent was filed. Even under the liberality that characterizes the treatment of such applications by the Patent Office, nothing new and inventive was

recognized. The application was rejected repeatedly and then that too was abandoned.

The only other items to be considered are the publications. They were written for popular appeal, they are obviously extravagant, exaggeration in them is admitted, and description of specific construction and operation does not appear in them.

With these as the broad lines of the condition presented, this Court is solicited to hold that it was Hastings, not Smith, who was responsible for the revolutionary change in the art of incubation resulting from the invention whose elements this Court has heretofore defined. We submit that, in order to hold with Respondents that it was Hastings who made the invention, it would be necessary for this Court to find that Hastings demonstrated his possession of the invention by building an incubator embodying it and operating that incubator successfully, or that he disclosed the invention in publications so clearly and fully that others following his published directions would employ it successfully. What Hastings did prior to the Smith invention would have to constitute what is known in patent law as a reduction to practice and an essential of reduction to practice is utilization of the invention in an operation which is sufficiently successful to demonstrate the value of the invention, or clear and complete disclosure of it in a publication.

The incubators built and operated by Hastings certainly do not suffice as such a demonstration. It is not suggested that any one profited financially or otherwise from what Hastings did. It is not suggested that anyone was led by what he did to conclude that some desirable goal in incubation could be reached by extending or developing his abortive efforts. The failure in each instance was too complete to tempt any one in any such direction.

It is not sufficient that Hastings was proceeding in the direction of the invention. The requisite is that he must

have proceeded so far as to demonstrate the value of the invention so that he or others would be led thereby to proceed further to ultimate success. On the records here presented, it is impossible to conclude, in accord with established principles, that any one of the incubators built and operated by Hastings was a reduction to practice of the invention.

As to publications, they could support a claim of prior invention and prior disclosure and thus be the equivalent of an actual reduction to practice only if they contained clear expositions of the invention. They would have to present the invention so completely and with such clarity as to warrant the conclusion that by those publications the public was put in possession of the invention. Nothing approaching that degree of certainty and clarity appears in the Hastings publications.

Nowhere in the publications, any one of them or all of them together, is there clear statement of the primary essentials of the invention under discussion, either staged incubation as defined in this Court's opinion, or the maintenance of a definite circulation of air at a velocity sufficient to effect the required transfer of heat and the maintenance of the necessary humidity and fresh air conditions. Only if there were certainty in the disclosure of these essentials of the invention so that the public could be said to have been put in possession of the invention by the publications could they be said to suffice as disclosures substantiating Respondents' claim. As this Court has so frequently said, the defense here urged requires certainty, not conjecture.

These Respondents say, and the Court of Appeals said, that the Hastings defense is presented more fully in the instant cases than it was in the prior ones. Respondents say also that petitioner is now contending for an interpretation and application of the Smith patent different in some material respect from that for which it contended in the

litigations prior to the decisions of this Court in the *Snow* and *Waxham* cases. Respondents also direct attention to a recent decision of the Supreme Court of Canada sustaining the Hastings defense and overruling a decision rejecting it by the Exchequer Court of Canada. Respondents maintain also that the incubators which they made and sold and used prior to the expiration of the Smith patent are not infringements. We therefore proceed with presentation of brief discussion of these four topics, together with reply to Respondents' contentions on the main issue of invalidity of the Smith patent by reason of prior invention, use, and publication by Hastings.

Evidence Offered in Support of the Hastings Defense.

Respondents and the Court of Appeals say that the proofs offered in support of the Hastings defense are substantially more complete in the instant cases than they were in the prior suits. We think that it is an item of minor consequence because the more complete the proofs are, the more thoroughly do they expose the failure of Hastings' efforts. But apart from that, the subject of the completeness of the proofs has significant aspects which make it worthy of brief comment.

The varying quantities in which the Hastings proofs have been offered in these litigations to date represent the differing views of different counsel representing different defendants as to what selection of Hastings' items of proof presents the Hastings defense in its strongest light. It is easy to perceive that one counsel for a defendant might think it better to keep Hastings off the witness stand since plaintiff could so easily prove by him the failure and abandonment of his several attempts at mass incubation. Another might advocate omitting the abandoned patent application because it was abandoned and because it is too apt to be regarded as encompassing the sum total of Hastings' novel ideas on the subject of mass incubation in 1911. Another might advocate omitting the "Dollar Hen" because

Hastings once called it an "impractical poultry book". The selection of the items of proof offered in the prior suits followed the lines thus indicated.

The cases at bar illustrate this still further. Counsel representing *Hall* evidently thought that Hastings' attempt at Muskogee was useless as defense material, or at least was deficient as compared with the Hastings effort at the Davis farm. Therefore the Hastings proofs in the *Hall* case are confined almost entirely to the Davis episode. On the other hand, counsel representing *James* took the opposite view and so we find in the *James* case that the Hastings proofs are confined almost entirely to the Muskogee episode.

These two cases, tried in different District Courts before different Judges and at different times, came on for argument together in the Court of Appeals and the two records were considered as one. In sustaining the defense, the Court of Appeals said this is the first time it has been "so fully presented and substantiated", and Respondents have seized on this as an aid in avoiding the effect of the numerous prior decisions rejecting it. Therefore what is specified by Respondents as the new evidence may well be considered from the standpoint of whether it adds anything to the *substance* of the proofs or only to the quantity.

It has abundantly appeared that Hastings testified in person in the *Cooley* case, and, in fact, in the *Sims* and *Street* cases. It appears on page 54 of the *Hall* record that in so doing he made more money than he had made in all of his attempts to practice mass incubation. Davis also testified in the *Cooley* case.

It is pointed out that Mrs. Davis testified as to the Brooklyn incubator and had never testified before. The testimony she gave appears to be entirely adequate explanation of why she had not testified before. She could give no first-hand evidence of consequence and what little she did give was said by the District Court Judge to be "largely hearsay" (Hall R. p. 216).

It is said that the original Hastings blower used at Muskogee was produced for the first time. Whether it was the one actually used at Muskogee is open to question, but assuming it is, it is of little consequence. No one representing Petitioner has ever denied that the Muskogee incubator was built and was operated in some fashion and employed a fan of some sort when so operating.

Next, it is said that Hastings and Lieber, his associate and backer at Muskogee who testified in the *Stone* case, developed the pertinent facts in greater detail than they had been previously. But it appears that they had developed the facts in sufficient detail in the previous cases, and the presentation of the greater quantity in this instance brought with it many contradictions and discrepancies.

Emphasis is given to the fact that several people, notably Hickox, who knew something about the Muskogee installation and who had not appeared in any of the prior cases, gave testimony in support of Hastings in this *James* case. But no one of them supplied any additional information on the items which are the only ones of importance, namely, how the Muskogee incubator was constructed, how it was operated, and what number of chicks was hatched from any stated number of eggs. Hickox produced an album containing photographs of the Muskogee incubator, but most of these photographs, and indeed the more important ones, were reproduced in the publications which were in the other cases.

It is suggested, though not stated directly, in the Court of Appeals opinion that the "brief" filed in connection with Hastings' abandoned application for patent was not considered in the prior litigations. The fact is that this brief along with all other papers filed in the Patent Office with Hastings' abandoned application were before the Courts in both the *Wolf* and *Cooley* cases.* The

*Counsel for Respondent Hall endorse the erroneous statement of the Court of Appeals of the Second Circuit at pages 5 and 13 of their Supplemental Brief.

very documents offered in evidence by the defendant in the *Hall* case were taken from the record in the *Cooley* case and the opinion of Judge Westenhaver in the *Wolf* case refers not only to the abandoned application itself but also to the "ingenious appeal of able patent counsel". (291 F. 253-9)

Finally, it is said that additional publications were presented for the first time, but this is accompanied by no claim that the additional ones add anything other than quantity, and it will be noted that Respondents' discussion of the Hastings publications is discussion of the ones which were in the earlier cases.

Thus, there is no substance to the assertion of Respondents and the Court of Appeals that the Hastings defense is any stronger than, or even different from what it was in the prior suits where it was rejected, except as it may be said to be weaker by reason of the additional contradictions and discrepancies it has developed.

We proceed now with more specific reply to Respondents' contentions on the principal items of the Hastings defense.

"The Dollar Hen."

The part of "The Dollar Hen" upon which Respondents appear to base their contention that "staged incubation" is there disclosed, is the statement that the hatching room is equal to only a fractional portion of the capacity of the *entire* incubator; one-sixth or one-third. It is argued from this that Hastings must have contemplated staged incubation. But that would be true only if it appeared that Hastings contemplated using one incubating or "egg chamber" and the contrary clearly appears in the portion of Hastings' book quoted on pages 15-16 of Respondent James' brief, which therefore defeats Respondent's contention. In that quoted matter are repeated references to "egg chambers" and "egg rooms". Thus, the incubator indicated in this article consisted of a plurality of egg chambers each of which may have had the same capacity

as the one hatching chamber, and the operation involved setting each chamber at one time and thus securing weekly or semi-weekly deliveries without practicing staged incubation. It is just such a construction and arrangement as this that Hastings employed later at Muskogee.

Furthermore, Hastings describes in the preceding pages of "The Dollar Hen" under the heading "The Future Method of Incubation" an incubator of the "single big room" type which he said had "fallen down". On page 104 Hastings refers to a "mammoth" incubator consisting of a row of box incubators supplied with a single heating system. It is immediately following this that he describes his new proposal and makes reference to the "egg chambers" and "egg rooms", which is further reason for concluding that he proposed an incubator consisting of several chambers or rooms additional to the hatching chamber in each of which a single setting of eggs would be treated through the whole incubating operation.

This procedure was in accord with the common commercial practice of that day. Had Hastings contemplated any departure from that established practice, such as setting a fractional part of the capacity of an egg chamber at intervals of three or four days, description of that departure would have been made clear and explicit. In the absence of such explicit statement that the eggs in the several chambers were to be set in staged incubation, no one would have gotten the suggestion of any such arrangement at that date.

Nor does it follow that Hastings' reference to uneven temperatures in the egg chambers signifies staged incubation. With eggs of the same age in a single room, unevenness of temperature may result. This is described in the "Poultry Culture" article (James R. p. 1115) where Hastings, in referring to the setting of the eggs (not in staged incubation) in superimposed trays, said that

> "the heated air rose causing a stratification or vertical difference in temperature of about 2° per ft."

Hastings' description of his proposed incubator in "The Dollar Hen", vague as it is on all features of construction and operation, appears to be concerned with the maintenance of the proper moisture conditions. In the paragraph towards the bottom of page 105 he describes two air streams, in one of which the air would be made moist by "sprinkling", and in the other of which the air would be "dried with deliquescent salts" in accordance with known cold storage practice. The air admitted to each of the several egg chambers was to be derived from these two sources in proportions governed "by electrically moved dampers which switch a greater or less proportion of the incoming current of the sprinkler or dryer as the case may be". To this is added a reference to "temperature dampers" which are also to be "electrically moved" under the automatic control of an "ordinary incubator thermostat", but these features of the construction and operation are not elucidated further.

The summary of this "Dollar Hen" disclosure therefore is this:

No drawings of any kind are included; the description is altogether vague and indefinite as to both construction and operation; nowhere is there any explicit reference to staged incubation, or to any other departure from the then established practice of setting an egg chamber to its entire capacity at a time; nowhere in it is there any reference to utilizing a definite circulation of air for effecting transfer of heat from old eggs to new ones; and as to the maintenance of the proper fresh air and moisture conditions, not only is there no suggestion of continuous discharge of old air and continuous intake of fresh air in restricted amounts, but instead a complex system of sprinklers and deliquescent salts and electrically moved dampers is suggested without sufficient description of them to inform one how they are to be employed.

Thus, this "Dollar Hen" is altogether too vague and indefinite* to permit of saying that it informed the public of the invention here in issue. Furthermore, this publication has been before the courts since the inception of the litigation on the Smith patent. In the *Wolf* case, Judge Westenhaver said

> "The earliest article in the 'Dollar Hen' may be disregarded as Hastings there merely describes a process for maintaining temperature in cold storage and suggests how it may be applied in a hatchery. It does not purport to describe an apparatus or ever to have been put to any use" (291 Fed. 253-257).

The Circuit Court of Appeals of the 6th Circuit, in its affirmance of Judge Westenhaver, likewise must have regarded this publication as insufficient to constitute anticipation.

Judge Bodine in the *Cooley* case was fully advised as to "The Dollar Hen" and his conclusion was that

> "Hastings' testimony added little to his published articles" (Appendix, p. ii).

The affirmance of Judge Bodine by the Circuit Court of Appeals of the Third Circuit shows the reaction of that Court to "The Dollar Hen".

Hastings himself evaluated this publication as an "impractical poultry book" (James R. p. 578-9). Hastings also admitted that Judge Westenhaver's analysis of this

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*"It must be admitted that, unless the earlier printed and published description does exhibit the later patented invention in such a full and intelligible manner as to enable persons skilled in the art to which the invention is related to comprehend it without assistance from the patent, or to make it, or repeat the process claimed, it is insufficient to invalidate the patent." Cohn v. U. S. Corset Co., 93 U. S. 366-370.

Eames v. Andrews, 122 U. S. 40-66.
Seymour v. Osborne, 11 Wall. 516-555.

publication, as quoted above, was correct. Hastings had but the haziest notions on the subject of incubation when he wrote this book, his ideas not having advanced beyond the mere transposition of Cooper's cold storage process to incubation. To contend that Hastings, at the date when this article was written and before he had tried out his ideas, had grasped every essential of the solution of mass incubation, is contrary to Hastings' own testimony at page 540 of the James Record, and is directly contradictory of the testimony which reveals that when he set about putting his ideas into practice, he failed.

The Davis Incubator.

On page 19 of Respondent James' brief is the statement that the Davis incubator at Brooklyn operated "during the season of 1910 and spring of 1911", and at page 20 that this incubator "operated through the hatching season of 1910 and 1911 and also during the next season".

The Davis incubator was not built until February, 1911 (Hall R. p. 52); it could not have been operated during the hatching season of 1910, and there is no proof in either record that it was operated "during the next season". In their Supplemental Brief (p. 18), Counsel for Respondent Hall stretch the evidence still further, saying that this incubator was used "until 1913".

The facts that Hastings filed an application for patent in 1911, and sought to secure capital to finance further experimentation, and published "The Million Egg Incubator" to aid the financing, mean nothing as to the success of the Davis incubator. "The Million Egg Incubator" contains at least one admitted falsehood to lure capital (James R. p. 554-5; Hall R. p. 55-6), and the letters contained in it may have been equally false and misleading, for the purpose appears to have been to exaggerate Hastings' accomplishment. The statements in these letters written at the behest of Hastings have no value as proof of the facts stated; we call attention again to

the fact that Orvis who wrote one of the letters was not called as a witness for either Respondent, from which it should be assumed that, if called, he would not have supported the statements.

It appears from the text of the letter that the basis for Orvis' statements was a single visit of one day only and he might have been there at a time when one hatch was coming off and another was being put in. If such were the case, Orvis could not have testified that Hastings was practising "staged incubation."

On page 6 of Respondent Hall's brief it is stated that the testimony of Mrs. Davis was that she "repeatedly inspected the incubator and observed both eggs and hatched chicks in staged incubation in the superimposed trays thereof during its operation." No record reference is given for this statement. The fact that she testified that she saw both eggs and chicks is not proof that staged incubation was being practiced, for at the time that she saw the incubator it may well have been that the eggs were just beginning to hatch. It is obvious that her testimony as to staged incubation was suggested to her and she founded her testimony solely upon the fact that eggs were received at intervals, and, as pointed out by the District Court, there is nothing to show whether the eggs were set in the Hastings incubator or the old-style "Cyphers" incubators which were being operated at the same time. The comments of Judge Hincks who listened to the witness testify and observed her deportment are quoted on page 27 of our main brief and appear in the Hall record at page 217.

On pages 10 and 11 of its brief, Respondent Hall quotes selected passages from the Hastings' file wrapper in an attempt to show that staged incubation was practised at Brooklyn, without calling attention to the dates on which those passages were written and filed. Only the first two passages appeared in the application as filed and the others did not make their appearance until long after Hastings

left Brooklyn, so the later passages furnish no corroborative evidence as to what happened in Brooklyn.

On page 12 of the Hall brief, the assertion is made that the notary who administered the oath and the witnesses to the original specification and drawings all knew about staged incubation from the fact that their names appear upon the application. Quite the contrary must be the fact, for the application as it was executed and witnessed by these persons contained no disclosure whatever of staged incubation (Hall R. p. 55).

On page 75 of the James brief it is stated that Hastings removed the fabric enclosures around the incubating chamber after a brief trial at the Davis plant. It is admitted that Hastings had the fabric in place when he started operations, but there is no corroboration of his statement that later he either removed the fabric enclosures or substituted something else for them.

Hastings application for patent was filed by him toward the close of his experiment at the Davis farm and it is reasonable to assume that he would not have shown the fabric enclosures unless he was using them. In that application he illustrated the fabric enclosures in his drawing and described them in his specification as a means for distributing the air uniformly, and he claimed them as essential elements of his invention (James R. 745-8).

This drawing in the Hastings application is the only contemporaneous drawing illustrating the construction of any Hastings incubator, and as to contemporaneous records of the production of chicks in a Hastings incubator, there are none.

The records before the Court contain numerous references to comparative tests run at the Davis farm between the Hastings incubator and the Cyphers incubators which were in operation there (James R. p. 550 and Hall R. p. 62), but no record of any one of these tests is produced. Hastings undertook to state from memory, fifteen or twenty years after the event, what the comparative tests

showed, and what he said is illuminating. He was totally unable to be specific as to the results obtained in percentage of chicks produced from specific numbers of eggs, and nowhere did he claim that his results were any more favorable than those obtained with the old Cyphers incubators. In fact, he stated specifically that his results were about the same. A typical statement is (Hall R. p. 52) that his operation.

> "was as successful as the previously used incubators that Mr. Davis had. I do not recall what was the percentage of the hatches."

Thus, the most that Hastings asserted was that his results were as good as those obtained from Davis' old Cyphers incubators and Davis said that he did not have "very good luck with the Cyphers" (Hall R. p. 58).

As to the letter signed by Davis and quoted on pages 22-23 of Respondent Hall's brief as Exhibit D-C in the Cooley case, when Davis was on the stand in the Hall case he was not questioned with regard to this letter nor was it offered in evidence. It is apparent that at the request of Hastings, Davis was violently exaggerating the percentage of hatch obtained in the Hastings' hatchery when he wrote that it "surpassed the results from competing Cyphers incubators" and was as high as "86 per cent."

The allegations at page 27 of the Hall brief that the thousands of customers for Sunday dinners at the Davis roadhouse saw the incubator is wholly without support in the record. We refer to pages 30 and 31 of our main brief on this point. Not a single customer was brought forward to testify as to having seen or even heard of the Hastings incubator which was in the cellar of the roadhouse carefully guarded from view because Hastings had not filed his application for patent. The booklet entitled "Davis Poultry Farm" (Deft.'s Ex. G) was merely an advertising folder of this farm and contains no reference whatever to the Hastings' incubator.

The attempt to establish a "sale" of the Brooklyn incubator to Davis found on pages 28-29 of Respondent Hall's brief is based solely upon the circumstances that Davis paid for the building of the incubator and gave Hastings a small salary while he was working on it in return for which he was given an unlimited license to use the "invention". The fact that Davis burned up the incubator "along with a bunch of other trash" (*Hall* R. p. 61) when he moved out of the place and never made any attempt to exercise his license shows his estimate of the worth of the incubator and the license.

One further point about the Hastings' Davis incubator is the reference to it on page 6 of the James brief which is significant in itself and also in its reflection of the brief as a whole. It is stated that Judge Bodine referred to the Davis incubator in his unreported opinion in the *Cooley* case and concluded that "a complete anticipation is indicated". What Judge Bodine wrote in his opinion is

> "In the present-day description of this hatchery" (the Davis hatcher) "and the drawings now made, a complete anticipation is indicated" (Appendix, p. ii).

and he continued with a spirited rejection of the Hastings defense. The sarcasm of his reference to a *present-day* description and drawings *now* made was either lost upon or ignored by counsel. The same obtuseness appears upon page 14 of the Supplemental Brief filed on behalf of Respondent Hall. The drawings mentioned by Judge Bodine were nicely executed drawings made on the eve of the trial of the *Cooley* case. Later in his opinion Judge Bodine said:

> "It seems impossible that the methods disclosed in his" (Hastings) "drawings should not bear a resemblance to Smith's successful incubator rather than his" (Hastings) "failures" (Appendix, p. vii).

Hastings' Abandoned Application.

We have fully discussed the various statements in the file history of the Hastings application and pointed out

that they are in conformity with the procedure which Hastings actually practiced at Muskogee, namely, the setting of each chamber to its full capacity with eggs of the same age and the progressive advancement of temperatures in the seven different chambers as incubation was advanced in the eggs in those chambers.

In the James brief an attempt has been made to read into the application as filed a disclosure of staged incubation. Counsel have overlooked the admission by Hastings himself that "there is no disclosure of staged incubation in that application as I signed it in April, 1911" (Hall R. p. 55). The statement on page 23 of the James brief that "the only source of uneven temperature would be eggs of different ages" is unwarranted. As noted above (p. 11), in any closed chamber there will be variations in temperature because hot air emanating from a full compartment of hot eggs will rise and cause stratification of the air by temperatures. The fact that this application speaks of unevenness of temperature is no indication that the applicant had in mind staged incubation.

The selected passages from the file wrapper of the Hastings abandoned application to which reference is made at pages 24-26 of the James brief were all written after the Muskogee hatchery had been in full operation and therefore refer to those operations, as is admitted by Respondent James. Unless these pages are consistent with the operations as there conducted they mean nothing. Lieber, the only witness, except Hastings, who knew how the incubator operated, testified that the eggs were arranged in separate chambers according to their ages and the temperatures of the chambers were carefully controlled by the dampers and successively graduated. As we noted in our main brief (p. 64-65) everything which appears in the file history following Muskogee is consistent with this operation.

On page 25 of the James brief, counsel have cleverly woven together isolated passages from the Hastings brief on appeal so that, when read in juxtaposition, these pas-

sages seem to foretell the Smith process. The quotations from the brief on appeal are separated by stars indicating omission of intervening matter. When the original brief is read, however, and these selected passages appear with their intervening context, no one, without supplementing the knowledge of 1913 by the Smith invention, would perceive that it was intended there to describe the setting of eggs in staged incubation as it is practiced in the Smith invention.

The words "eggs at all stages of development" in the Hastings brief in reality refer to the stages of development in which any group of eggs in a single chamber may be at any given time, and when we understand that Hastings had seven separate and distinct chambers, each of which contained eggs of one age (but the different chambers contained eggs of different ages), the entire brief takes on its proper significance and acquires a different meaning from that imposed upon it by Respondents.

One of the passages omitted by counsel for James shows conclusively that Hastings' only conception for combating the heat due to the advancement of incubation was by a forced draft of air. If he had had any conception of combating the rise in temperature by intermingling the eggs in varying stages of development and subjecting them to the same draft of air, he would have said so at that point or at some other point in his brief.

The omitted passage to which we refer begins at the bottom of page 753 of the James record:

> "In a large collection of eggs in which incubation has started the temperature at the center of the collection will be raised very much higher than the temperature nearer the bottom and sides of the collection, from which it appears very clear that the reason for the success of the small incubator with its single layer of eggs is due to the fact that with such a small egg chamber uniform conditions are more easily maintained and it is only necessary to watch the condition

> of the particular horizontal air stratum in which the eggs are located. Such ideal conditions cannot, however, be maintained in a large incubating chamber containing many superposed layers of eggs. The simple way in which applicant overcame the difficulty was through the provision of a mechanically operated air forcing means which would force a rapid circulation of air through the whole collection of eggs in the chamber and past the heater."

It is quite evident from this passage that Hastings was here referring to a chamber in which the eggs were of one age and that the "simple way" in which Hastings sought to combat the rise in temperature was *the application of the forced draft alone.* He expected the forced draft to accomplish this purpose upon a large mass of eggs all in one stage of incubation. He had no conception of combining staged incubation with forced draft, otherwise he would not so clearly and distinctly have placed his entire reliance upon the forced draft. This is further borne out by the fact that in both the "Poultry Culture" article (James R. p. 1115) and in the Hickox' paper (James R. p. 1121) the use of forced draft only is described as the means employed to counteract the heat in an incubator chamber.

This is exactly what the Examiner in the Patent Office said:

> "In the device under consideration applicant has supplied an electric fan in an ordinary type of incubator" (*James* R. p. 748).

And the Examiners-in-Chief, after reading the brief filed in support of Hastings' claim of invention, affirmed the Examiner's rejection of the application, saying that nothing more was presented

> "than would be found in the Day incubator if a fan were supplied to give better ventilation" (*James* R. p. 760).

No attempt is made by Respondents to explain away these statements in the Hastings brief which clearly d-

scribe the modification of temperatures for the different chambers in the actual operations at Muskogee (p. 65, Petitioner's Main Brief) and no effort to reconcile the operations there described with the contention that at Muskogee Hastings practiced the Smith invention.

At page 12 of Respondent Hall's brief, attention is called to the fact that Church and Church, able patent counsel that they were, "made no effort to claim for him" (Hastings) "that feature in association with eggs in staged incubation." Respondent then goes on to say "not only that combination but its various advantages were clearly disclosed to them". Nothing to substantiate this statement appears in the record, and we may rest assured that staged incubation was not disclosed to Church and Church for (1) they never claimed it as they certainly would had Hastings disclosed it to them—they would not have failed to make this the basis for a claim and an argument for invention; (2) no one from the office of Church and Church was called to testify to this vital feature of the case, and none of the "mass of data and information derived from a practical hatchery of large capacity which is being operated by the applicant" referred to in the amendment of May 24, 1912 (*James* R. p. 742), was produced from the offices of these attorneys and no excuse offered for not bringing it forward.

The allowance of the Smith patent by the same Examiner who had rejected the Hastings application (James R. p. 749 and 796) shows that the Patent Office recognized the invention when Smith disclosed the combination *including staged incubation*, but failed to find any invention in the Hastings application, arguments or briefs which are said by Respondents to disclose that same combination. The assertion of Respondents' counsel that Hastings' application would have issued had the Patent Office taken the same view that this Court did in regard to the Smith invention proceeds from the unwarranted assumption that the Hastings application discloses the Smith invention.

Lacking wholly the disclosure of staged incubation (and indeed the disclosure of adequate circulation of air) the

Hastings application is not a "constructive reduction to practice" of the Smith invention and, consequently, the ruling of this Court in the case of *Alexander Milburn Co.* v. *Davis*, 270 U. S. 390, 401, has no application whatsoever. Furthermore, the passages which are relied upon by Respondents are in the arguments accompanying the application and would not have appeared in any patent issued on the Hastings application.

Counsel for Respondents urged at the hearing that the file wrapper should be considered as a complete anticipation without regard to the process which Hastings actually carried on, contending that the doctrine of *Alexander Milburn Co.* v. *Davis, etc., Co.*, should be enlarged to such an extent as to give to arguments in the file wrapper of the Hastings application the same force and effect as was given to the disclosure in the Clifford patent in that case. There is, however, an essential and vital difference between the Clifford application and the Hastings file wrapper. The Clifford application subsequently issued as a patent. The Hastings application was *abandoned* and the arguments contained therein reposed in the secret archives of the Patent Office until produced for the purposes of the Smith litigation. The contents of the Hastings file wrapper were not revealed to the public until the trial of the *Wolf* case in 1923, and were just as secret and closely guarded as if the application had never been filed. In the case of *Milburn* v. *Davis* it was suggested by this Court that "if Clifford had written out his prior description and kept it in his portfolio uncommunicated to anyone", his earlier conception would not operate as a bar to the Whitford patent, but that as he went ahead and made it public as soon as he reasonably could, the subsequent publication of the Clifford patent made the disclosure in the application a valid reference effective from its filing date. The file wrapper of the Hastings' abandoned application was as closely guarded from the public as if he had kept it in his portfolio.

The force to be given to abandoned applications was settled very early by *The Corn-Planter Patent Case*, 23

Wall. 181. The pertinent passage from the decision is quoted on page 62 of our main brief. In that quotation, the very distinction upon which we rely was pointed out by the Court when it said:

> "Had a patent been actually granted * * *, it would have been different."

The only use to which an abandoned application can be put is as corroborating other evidence of an actual use. This Court said: "But a mere application for a patent is not mentioned as such a bar. It can only have a bearing on the question of prior invention or discovery" (p. 211).

We do not believe that this Court intended, by the *Milburn-Davis* decision, to upset the practice established by the *Corn-Planter Case* and followed for over sixty years. If this Court were to sustain the contention of Respondents that the file wrapper is sufficient in itself to anticipate Smith, then the *Corn-Planter Case* would be overruled and the defendant in any patent suit could, by the introduction of the file wrapper of an abandoned application, make the same plea. The injury which would result is evident; any patent would be subject to attack from argumentative statements contained in abandoned applications and the beneficial results of the *Corn-Planter Case* would be lost.

Apart from this, however, is the fact that the passages from the Hastings file-wrapper read upon an operation wholly different from the invention in litigation, and therefore it is necessary to conclude that the file-wrapper fails to set forth the invention with sufficient clarity to enable one skilled in the art to practice it, even were the fact of its abandonment overlooked. The test is whether one skilled in the art, at the date the Hastings application was pending and without knowledge of the later invention of Smith, would be led by the arguments in the Hastings file wrapper to practice the Smith invention. We think not, and our conclusion to that effect is supported by the fact that Hastings actually practiced a wholly different method.

The Muskogee Incubator.

The James brief proceeds upon the theory that proof of the one-time existence of the Muskogee incubator and of the attempt to operate it is all that is required to anticipate Smith. The multitude of witnesses who testified that it failed disastrously for all those who had anything to do with it, is regarded as a matter of no consequence.

It is admitted that the exhaust fan incubator was a failure but the only contemporaneous photograph (Ex. 26-C) which shows a fan shows this same fan.* The Court is asked to compare this photograph which is opposite page 34 of the James brief with the blower fan shown in the two recent Hastings drawings opposite page 33. In the photograph the exhaust fan is shown blowing directly toward the first chamber whereas in the drawing the blower fan is shown delivering to a passage at the rear of the row of chambers. The drawing cannot be an accurate representation of the construction for it disagrees in every respect with the photograph.

As we pointed out in pages 51 to 52 of our main brief, there is no proof whatever that the blower fan was ever purchased, much less installed. Respondent James insinuates that the offer made by Taggart to purchase the fan from Lieber upon the latter's representation that it was a true relic, was for the purpose of suppressing evidence. This offer by Taggart to purchase the fan occurred in 1926 (James R. p. 663) after the Hastings defense had been made a public record in three litigations on the Smith patent. Also, if Smith had desired to suppress evidence of Hastings' prior efforts he might have made such a deal with Hastings when the latter called at Smith's Cleveland office in 1917 on his way to Tiffin, Ohio, when Hastings offered to "co-operate" with Smith for a consideration (James R. p. 576 to 577). The explanation of Taggart is logical and rings true; there was nothing irregular or culpable in attempting to collect the evidence of this prior

*All of the publications which illustrate a fan show this same fan.

failure which had been rejected by five separate tribunals before the offer was made. At that time Taggart was thoroughly justified in regarding the Hastings incubator and everything connected with it as merely an interesting antiquity.

The photograph (Ex. 26-F) opposite page 36 of the *James* brief, and its caption (which is not on the original exhibit and is entirely misleading) well illustrate the extremity to which Respondent James has been forced in the attempt to support the oral testimony of Hastings that he set eggs of different ages in the same chamber. This photograph was not taken during the period when the incubator was in full operation but was taken during January, 1912. The hatch shown there is the so-called "demonstration hatch" referred to on the third page of the "Poultry Culture" article of February, 1912 (James R. p. 1298-A), and shown in the photographs on the first page of the same article (James R. p. 1115). Hastings made this very clear (James R. p. 556).

> "That is the demonstration hatch which is illustrated in this photograph appearing in Poultry Culture. That is the same hatch which was illustrated in the photograph* appearing on page 88 of this scrap book, at the left except that it is a separate photograph. One is taken with myself, and the other with my assistant employee. They were taken on the same day. The photographs show them to be of the same hatch, with a different man shown in the picture.
>
> Q. How were the eggs set in this hatch—set all at one time?
>
> A. They were hatching all at one time.
>
> Q. And were they set all at one time?
>
> A. I think my answer is sufficient—they were hatching at one time."

At the date this photograph was taken there were no eggs in any other part of the incubator; "the other trays shown in this photograph were all empty" (James R. p. 557). This

*Offered in evidence as Exhibit 26-F (James R. p. 527).

photograph and the facts in connection with it, instead of contradicting the theory of operation of the Muskogee incubator for which we have contended, actually supports it. To demonstrate the incubator, Hastings set one batch of eggs at one time in a single chamber and brought them to hatching at the same time. He therefore had no conception of staged incubation, for, had he conceived that staged incubation was a necessary feature of his invention, he would not have been satisfied with a demonstration which consisted in hatching one group of eggs set at one time.

Photograph Exhibit 26-D (marked Figure 5)* between pages 36 and 37 of the James brief does not prove that eggs were set in staged incubation as alleged by counsel for James. This photograph was alleged to have been taken under Hickox' direction at about the same time as the remaining photographs (James R. p. 592). Therefore, Exhibits 26-D* and 26-F are of the same batch of eggs. As stated by Hickox (James R. p. 597), this was "within the latter part of the year 1911 or the early part of the year 1912, very soon after the 1st of January, 1912, if it was in that year". We have shown above that the photograph Exhibit 26-F was taken of the so-called "demonstration hatch" in January, 1912, in which the eggs were all set at one time. Photograph Exhibit 26-D shows the same batch of eggs as the chicks begin to appear. *The eggs which are shown unbroken in this photograph are of the same age* as those from which the chicks are shown emerging. Chicks do not hatch simultaneously from a batch of eggs and that explains why only a few chicks are shown in the photograph Exhibit 26-D while more chicks are shown in Exhibit 26-F. Even if Hickox were in error as to the date when photograph 26-D was taken, the fact that only a few chicks are shown is no indi-

*It should be noted that Exhibit 26-D (James R. p. 1127) consists of two photographs. We are here referring to the one at the *bottom* of page 1127 of the James Record.

cation that the other eggs shown in the photograph were of a different age. The caption on the photograph, "stage incubation in a stack" (which is not on the original exhibit) is therefore misleading.

The photograph, Exhibit 26-D, following page 34 of the James brief, shows conclusively that Hastings hatched only in one chamber.* This was taken in the midst of the hatching season and the hatching trays (those with high sides in the background of the photograph) all were confined to the last chamber of the row.

Hickox went into great detail as to the taking of these photographs. He placed his initials upon all of them at the time of the taking of the testimony, and asserted that they were all "taken on one day, within a couple of hours" (James R. p. 597). As noted above, the Exhibit 26-F photograph which bears his initials was taken at the time of the "demonstration hatch". Also, the photograph, Exhibit 26-C, opposite page 37 of the James brief, showing Hastings in the act of inserting a tray in one of the compartments, according to Hastings was "probably taken about the same time as the demonstration hatch" (James R. p. 561), a fact which is true because this photograph was reproduced on the first page of the "Poultry Culture" article of February, 1912 (James R. p. 1115).

Obviously, these photographs were not taken at the same time as the photograph Exhibit 26-D following page 34 of the James brief, and Hastings confirms this for he testified that this latter photograph "was obviously taken later in the hatching season" (James R. p. 561).

Respondent James admits, on page 39, that perhaps there were different temperatures in different chambers and says that the commingling of the air from all of the chambers would bring them to a uniform temperature. This, of course, is a contradiction in itself and cannot be done because the 5,000 eggs in each chamber will affect

*We are here referring to the photograph at the *top* of page 1127 of the James Record.

the temperature within the chamber to a marked degree. Furthermore, it is not what the record says. Hastings had the individual dampers at the top of each chamber and "a thermometer in each compartment, and with the valves or cut-offs he would get the amount of heat that he needed in each compartment to make it the temperature he wanted" (Lieber, James R. p. 777). The amount of air entering each chamber could be controlled and it was Hastings' intention to regulate and progressively increase the temperatures in the several chambers by adjusting the dampers, just as the temperatures of two rooms can be varied by opening windows to a greater or less extent.

The attempt to find a parallel between the disclosure in the Smith patent and the separate chambers of the Hastings invention (James brief, p. 41) is so cleverly deceptive that it merits answer. In Smith, behind each curtain is an open space holding eggs in the different stages of incubation and the air passes by all ages of eggs before it is returned to the fan. This is also the method of operating the James incubator. There is nothing in either the Smith patent or the James incubator which segregates the eggs by ages and subjects each age to different air temperatures.

Respondent James has attempted to establish that the operation to which Lieber testified, namely, the segregation of the eggs in accordance with their ages in separate chambers and the progressive variation in temperature was "experimental" and was tried out only at the start of the operation. This is not what Lieber said, however. Lieber said in the Stone case that if Hastings had only a few eggs he would operate his incubator "*as the ordinary small incubator*" was operated but that if he was running to capacity "it would be necessary to transfer the eggs of a certain stage of incubation all into one compartment" (James R. p. 782) and in testifying in the James case Lieber said: "when he had a few eggs, he might set all the eggs in one compartment" in which case he regu-

lated the temperature as incubation progressed in accordance with the age of the eggs. "He would have to keep the temperature at different stages according to the age of the egg" (James R. p. 627). In either case, Hastings practiced the progressive advancement of temperature, for in his conception, it was "necessary because when eggs when first placed in an incubator they required the maximum amount of heat, whereas a few days before they hatched the chicks in the eggs furnished considerable heat, and therefore it was not necessary to supply as much artificial heat just before the chicks hatched. • • • He gave this as his reason for having to have the device so that it would have one temperature in one compartment and a different temperature in another compartment. • • • And that is my recollection today" (James R. p. 628). Lieber was very positive that "the incubator was constructed so that each separate compartment could have the temperature desired" (James R. p. 780). *Lieber was defendant's own witness,* and that he *knew* what he was talking about is beyond question, for he said:

> "I was right there every day. Not all the time, of course. I was in and around the place there; had my office right on the same lot" (James R. p. 615).

This Court is warned that the references to pages 517-518 and 535-536 of the Record on page 38 of the James brief where it is said that Lieber supported Hastings' testimony that Hastings set eggs of different ages in the same stack, *is not the testimony of Lieber. This is Hastings' tetimony.* The reference to page 782 of the Record has been disposed of above. At that point Lieber did not say that Hastings set the eggs in staged incubation in a single chamber. **There is no support whatever in the Record for the testimony of Hastings on this vital point, but many contradictions among which are the following:**

From the testimony of Lieber in the James' Record, page 603:

"the seventh compartment, I might state right here, was not necessarily for hatching but to take the chickens off when they had been hatched • • • and the intake or top of the compartment had a valve you would call it, just a slide so he could regulate the amount of air that went in there. *He could enclose it off entirely if he wanted to, or open it wide open, so that he could regulate the amount of heat he had in each compartment.*"

(P. 604-5:)

"Now, the space on the drawing that has the ink line with the letter 'R' on it, that is the 'valve' you would call it, or 'regulator' to regulate the amount of air that was let into a compartment. On the top of each compartment there. With that slide arrangement so that that hole in the top could be closed or opened as you wished—just according to the amount of air that he wanted in each compartment."

(P. 626:)

"but I remember it was a 30,000 egg incubator, six (6) compartments at five thousand (5,000) each, and one (1) compartment that he used to take the chicks off in, *because he had to have different temperatures in each department*" (compartment).

(P. 627-8:)

The testimony on these two pages is all pertinent. The following extracts will suffice.

"The purpose of those shutters or those slides at the top of each compartment was to let the amount of heat that he wanted into each compartment, to keep it the proper temperature. That is to say, *that kept each compartment at a different temperature, according to his idea about hatching.* When the eggs were in one stage of hatching they were set in one compartment,

and then moved to another, and then moved to another. . . . . .

He kept the temperature of the compartments at a different temperature according to the age of the eggs, according to what the standard was, or what the temperature of the eggs should be at a certain period of their hatching. And then he moved the eggs over to the last compartment at the time the chickens were hatched. . . . . .

And he adjusted those slides so more or less hot air would go into each compartment, to control the temperature. The temperature of the different compartments was different. My recollection is that the temperature varied about ten degrees from the starting to the end. . . . . . .

He had valves or cut-offs connected with each of these sections, or compartments, by which he could regulate the heat of the air in each section or compartment. He could have one temperature in one compartment and a different temperature in another. . . .

He gave this as his reason for having to have the device so that it would have one temperature in one compartment and a different temperature in another compartment."

(P. 777:)

"There was a thermometer in each compartment, and with the valves or cut-offs he would get the amount of heat that he needed in each compartment to make it the temperature he wanted."

(P. 780:)

"between the air conduit 'H' and each egg chamber was a cut-off or valve, by which *the heat in each separate egg chamber was regulated.* . . .

There was a space between the egg chamber and the top of the building. My recollection is that it had a

little door just above each compartment which he could open and with his hand push the cut-off or valve either way."

(P. 782:)

"If he had only a few hundred dozen, he could incubate them all in one compartment, whereas, if he had many eggs, *it would be necessary to transfer the eggs of a certain stage of incubation all into one compartment.* In other words, it was fixed so that it could be operated as the ordinary small incubator, used in the homes. Or would be operated on a large scale."

From the "Poultry Culture" Article (James R. p. 1115-1116).

In the second column of this article appears the statement, "During hatching, trays with higher sides are placed on alternating tray slides, thus requiring two compartments for hatching the twenty trays incubated in one". This statement is wholly inconsistent with Hastings' testimony that he hatched eggs in all of the compartments. It is consistent with Lieber's testimony.

Again at the bottom of the last column of page 1115 of the record, and on the top of the first column on page 1116, the following appears:

"Although the difference is less marked than in the dead air machine it is to be expected that varying degrees of air temperature will be required in heating (or cooling) eggs in varying quantities and different stages of incubation. To accommodate this need, the inventor has ingeniously arranged that the air be divided, after it leaves the fan, into two flumes. One of these passes the heater and the other does not. Into the ceiling of each compartment slide dampers open from either flume, so that by opening the two in proper relative proportions any temperature desired may be attained in any compartment."

In Exhibit 26-A, which is a description of the operation of the Hastings' Incubator, found in the Hickox Album (James R. p. 1121) the following appears:

"When the hatching begins, alternate trays are fitted with high sides which will require two compartments for the actual hatching out of the twenty trays incubated in one compartment." This is a repetition of the first quotation from the "Poultry Culture" article above.

Respondent James is bound by Lieber's testimony and it shows conclusively that Hastings operated each chamber, whether the entire incubator was filled to capacity or not, just as the old single stage incubators of the prior art were operated, with all of the eggs in a chamber of one age, and with progressively increasing air temperatures as incubation progressed (James R. p. 51-52). In other words, Hastings did not practice the Smith invention for he did not avoid the difficulties of the prior art which arose by "the necessity of varying, by nice adjustments, the temperature of the applied air, so as to conform to the varying temperatures of the eggs as they passed through successive stages of incubation" (Smith v. Snow, 294 U. S. 1-7).

The experience of the art since the advent of the Smith patent has taught that in egg chambers of the capacity which Hastings employed, it is impossible to secure successful results by the Hastings method.

Each of the individual chambers of the Hastings incubator held 5,000 eggs. This is approximately double the capacity of one of the egg chambers of a Jamesway incubator, so that any difficulties in maintaining proper incubating temperature in the individual chambers would be greatly increased in the Hastings incubator over the Jamesway incubator. In addition, the fact that in the Hastings incubator an air speed of 30 feet per minute was employed while in the Jamesway the average is 135 feet per minute with much higher speeds at various points, makes the regulation of temperature in Hastings more difficult.

Yet we find that in a Jamesway egg chamber with half the egg capacity and with more than four times greater air speed, the temperature cannot be controlled unless staged incubation is used. Jamesway instructs its operators to set the cabinet at intervals of 3½ days with approximately one-fifth of the whole capacity at a setting (James R. p. 86), and the operator is warned that unless staged incubation is followed disaster will result. Jamesway says:

> "Do not leave the cabinet full of eggs of the same age as, after the tenth or twelfth day, enough animal heat will be created so that you cannot keep this cabinet down in temperature" (James R. p. 96).

With this present-day knowledge, let us project ourselves back to the Hastings incubator at the time of the picture Exhibit 26-D between pages 34-35 of the James brief. Each of the cabinets or chambers is filled with 5,000 eggs. The eggs in cabinets 4 to 7 have reached or passed the "tenth or twelfth day". The doors are closed and the only air received is through the inlet at the top of each chamber and a feeble current of 30 feet a minute is trying to penetrate the mass of eggs. Each egg is giving off heat and, in the more advanced chambers, the eggs may reach as high as 109° (Ex. 4-A, James R. 677). There are no cold eggs in chambers 4 to 7 to absorb the heat, and no air current vigorous enough to overcome the heat waves rising from these closely packed eggs, each a miniature furnace in itself. Hastings could not have maintained the uniform temperature essential to successful incubation. A few chicks may have survived, but the average secured under those conditions had to be well below the range in which commercial success was possible. It is no wonder that Hastings' customers received such poor returns and that Hastings became discouraged (James R. p. 536) and that he abandoned his incubator, and that those he left

behind gave up after one attempt to operate the incubator the following year.

It is impossible to reconcile our brief and the James brief as to the success, or lack of success, of the Muskogee incubator. In fact, it is difficult to recognize that these briefs refer to the same thing. In the James brief, the hatchery is pictured as a busy concern with hundreds or even thousands of happy customers bringing in eggs and taking out chicks, throughly satisfied and pleased with the new enterprise. It is difficult to reconcile this conception with the actual results or, in fact, with the testimony. On page 50 of its brief, Respondent James lists a number of witnesses to support its contention. Let's look at the record and see what the witnesses testified:

Hickox testified that he had no connection with the enterprise and no one would have "kicked" to him if the incubator had not worked properly (James R. p. 598).

Peabody testified (James R. p. 601) "Whether it hatched eggs or not that would be something that would not come to me."

Lieber was so thoroughly disgusted with the whole enterprise that after it was all over he would have nothing more to do with any incubator whatsoever. His experience with the Hastings incubator soured him on all incubators—"one was enough for me" (James R. p. 631).

Pitts testified that the percentage of hatch was very low and "he didn't have very good chicks and the chicks that were hatched were rather weak" (James R. p. 637).

Brewer did not know whether the chicks he received were hatched from his own eggs or supplied from

other sources and consequently he knew nothing of the percentage of hatch secured (James R. p. 641).

Campbell "thinks" the incubator was a success, but he did not know how many chicks his parents received, or the percentage of hatch (James R. p. 642).

Cory's experience was disastrous. He never received a single chick from three or four lots of 100 eggs each. Hastings gave no excuse except that "they didn't hatch"; it was a "complete failure" (James R. p. 645). Respondent's excuse for this is that Hastings stole Cory's chicks (James Brief, p. 45).

Shanafelt, an experienced poultryman, received a "very poor hatch" (not more than 7 chicks from 200 eggs) in his one experience with the incubator (James R. p. 648), and testified that the poultrymen around Muskogee "were very much disappointed" with the results Hastings obtained. They had been led to believe that the Hastings hatchery would be a very valuable addition to the enterprises of the town of Muskogee, but they were doomed to disappointment (James R. p. 649).

Ward's testimony is that Hastings never got over 50% hatch. In other words, Hastings' high point was 50%—not his average as Respondent James would have it believed. His average must have been very low if 50% was his high (James R. p. 657).

Anderson took from 150 to 200 eggs to the Hastings hatchery, and got 5 chicks. He said, "I got disgusted and quit" (James R. p. 769) because he took fertile eggs to the hatchery and received no results (p. 770).

Hogan took a few chicks in payment for cleaning some clothes but knew nothing about the results secured at the hatchery (James R. p. 787).

Hastings said that he was "discouraged with my work" (James R. p. 536).

Finally *Hastings*, testifying in Canada, admitted "The hatching records as a whole for that plant were not high and there were many individual cases of very poor results. I should judge that the hatching record of the whole would run around 40 per cent." (Appendix, p. xxxv).

In addition to which we have the mute but very persuasive evidence of the abandoned incubator itself, destroyed after one attempt to operate it in the year following Hastings departure.

Of course, the object of the invention is to improve upon the hatching results obtainable with old style incubators. There is no evidence that Hastings did so. Smith did (294 U. S. 1, 7).

Answers to Miscellaneous Points in the Brief of Respondent Hall.

The brief filed on behalf of Respondent Hall is full of many references and quotations to matters not in any record before this Court. Certainly Petitioner was not required to make any reference to such matters in his main brief and should not be required to make any reply now to matters *dehors* the record.

The Cooley Record.

The most aggravated departure from the record consists in frequent references to the record in the case of *Buckeye Incubator Co., et al.*, v. *Cooley*. From reading Respondent Hall's brief one would gather that the entire Cooley record had been introduced by counsel for Hall as Defendant's Exhibit F. This is not the fact.

The facts with regard to the *Cooley* record are as follows:

Prior to the trial of the Hall case counsel entered into a stipulation (Hall R. p. 164-5)

> "that certified copies of testimony previously taken in other cases upon the Smith patent, to wit:
>
> *Buckeye Incubator Co., et al.*, v. *Cooley*, D. C. N. J.
>
> • • • • • •
>
> relating to the so-called 'Hastings prior use' may be offered by either party and received in evidence in the instant case with the same force and effect as though it had been taken herein."

At the trial a selected portion only of the record was offered in evidence as Defendant's Exhibit F. This portion of the record consists of pages 258-295 of the Cooley record (Hall R. p. 51). *This was all that was offered.* As is further shown by the discussion on page 51 of the record and by the findings of fact by the District Court, these pages contained the file of the abandoned Hastings' application and *nothing more.** The Court said:

> "Subject to plaintiff's exception, the abandoned application with the accompanying file wrapper is received in evidence as Exhibit F." (Hall R. p. 216.)

In the James record certain other portions of this Cooley record were offered and received in evidence (James R.

*The file wrapper as it appears in the Hall record, has at some time been mutilated. The file wrapper in the James record is a reproduction of a photostatic copy of the original document taken from the Cooley record. The document presented by respondent Hall as Exhibit F has been copiously underlined. This underlining constitutes an alteration of the original file wrapper changing it from the true certified copy it originally was, as is shown by the paster attached to it and by a comparison of the corresponding pages as they are reproduced in the James record.

p. 581), but that offer did not include the testimony of the witness, Chambless, or the testimony of Davis (given in the Cooley case).

The unwarranted references to and quotations from the testimony of Chambless are scattered through Respondent Hall's brief to such an extent that it is practically impossible to delete them and leave the accompanying portion of the brief readable.

The following is a specification of the portions of the Hall brief referring to testimony of Davis and Chambless which is not in any record now before this Court:

All of that portion of page 4 of the brief which refers to the building of the Cooley incubator and the making of the drawings. (Cooley Ex. D-D.)

The statement that Defendant's Exhibit F contains anything other than the abandoned file wrapper (p. 13).

The references to pages 365-371 of the Cooley record (p. 16 of the brief).

The references to the testimony of Chambless at page 17 of the brief.

The entire quotation of Chambless' testimony and the comment thereon on pages 19 and 20 of the brief.

The reference to and quotation from the testimony of Chambless at page 21 of the brief.

Other References to Matters Not in the Record.

Respondent Hall's brief also contains references to many other alleged facts for which there is no support in the record.

An attempt to identify certain objects in the photographs forming a part of "The Million Egg Incubator" is found on page 21. There is no testimony in the present records as to the photographs or the objects shown in them for

the photographs were not referred to by any witness in either case.

The statement appears at page 24 that counsel "informed the Court below that we made a diligent search for Orvis, Miller and said helper with the result that we were credibly informed that they were dead." No such statement appears on the record, and we deny that it was made. The statement that Orvis was dead and the statement that Miller was dead (no reference is made to the helper) appeared for the first time in "Assignment of Errors on Appeal" on page 229 of the record. When counsel was confronted with the finding by Judge Hincks that there was a "dearth of evidence" which was "not without significance" (Hall R. p. 217) he tried to excuse himself by advancing a statement as to the death of these individuals, a statement now admitted (Hall Brief, p. 25) not to be true as to Orvis at least.*

The dissertation on egg temperatures at page 39 of Respondent Hall's brief is wholly without support in the record and rests in the imagination of counsel.

The reference on page 40 of Respondent Hall's brief to certain alleged testimony with regard to percentages of hatch said to have been given in the case of *Smith* v. *Le Mieux* in Wisconsin is entirely without support in the present record.

The reference to and long quotations from the *Cooley* record with regard to the alleged Smith prior use found on pages 43-44 of the Hall brief is wholly without support in the record. The Attica experiment in 1912 was testi-

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*These facts bring in sharp relief that in neither of the cases before this Court were important witnesses who were likely to corroborate Hastings' testimony (if true) called by either respondent. In the Hall case, Orvis, Chambless, Miller and Miller's helper were essential witnesses to the Brooklyn events and should have been called but were not. In the James' case Hastain, Dierfield and Hicks were not called as to the operations of the Muskogee incubator nor was their absence accounted for.

fied to in the *Waxham* case and was before this Court (*Waxham* R. 548).

The footnote on page 16 of the Hall brief is quite pertinent and very forcibly brings to the attention of this Court that substantially the same thing as the Brooklyn incubator was in the Waxham case and was found by the Circuit Court of Appeals of the Ninth Circuit not to anticipate.

Both Lawry and Hastings sat at the feet of Madison Cooper, the cold storage engineer, and thought they had learned from him how to incubate eggs in the mass. Both copied his ideas and both duplicated his apparatus, Hastings at Brooklyn, N. Y., and Lawry at Pacific, Missouri. Both tried to hatch eggs and both failed miserably, and the wrecks of their efforts have been repeatedly used in attempts to upset the Smith patent. The testimony with regard to the Lawry incubator at Pacific, Missouri, with drawings of the incubator there constructed are found at pages 433-480 and Exhibits 7A-C in the *Waxham* record. Hastings' Brooklyn incubator was a substantial duplicate of Lawry's, except that for perforated partitions at the top and bottom of the incubating room Hastings used fabrics in simulation of these partitions which were a vital part of Cooper's cold storage device. Lawry failed and Hastings failed. Lawry's efforts were successively rejected in the *Waxham* case by the Master, the District Court and the Court of Appeals of the Ninth Circuit, whose decree was affirmed by this court.

A comparison of the drawings of the Lawry incubator in the *Waxham* record and the drawing of the abandoned application of Hastings shows the common parenthood of Madison Cooper's cold storage apparatus, and the experiences of these two experimenters were exactly parallel.

Alleged Insufficiency of Smith Patent.

At pages 30-33 of Respondent Hall's brief, the matter of temperatures is argued at considerable length. We

have already discussed this matter at pages 86 to 89 of our main brief where the facts are briefly marshalled and Respondent's contentions shown to be without merit. The meat of Respondent's argument is that, due to certain specific temperature ranges stated in the specification, the Smith patent taught the art nothing and is valueless for that reason. The profound revolution in the art of incubation which is traceable directly to Smith is a conclusive answer to any such contention.

In the art of incubation we are dealing with a subject which, since the Smith invention and due to the impetus given it by that invention, has grown by leaps and bounds. It is not unreasonable to suppose that based upon the fundamental principles of the Smith invention advances have been made. These had to do, mainly, with the major elements of incubation, *i. e.*, temperatures and humidities.

At the date of the Smith invention the recognized and recommended temperatures ranged from 101½ to 105° F., it being the practice to increase the temperatures progressively as incubation progressed (James R. p. 52). Hastings said that the Cyphers incubators of the period were run at 102½° F. (Hall R. p. 59). At that period also the humidity of the incubator was quite low as compared to present day standards. The Smith patent made no recommendation as to humidities. The recommendation in the patent as to temperature was at that day recognized as the correct temperature range, *i. e.*, "between 100° and 105° Fahrenheit approximately" (p. 1, l. 18, 19; James R. p. 673).

The only way by which one can control the temperature of the eggs is by the temperature of the air. The processes of nature are fixed, but by maintaining the air temperature within a certain range, the temperature of the egg can be kept from going out of safe bounds, either too low before the eleventh day, or too high thereafter. The Smith patent instructed the operator "to keep the temperature throughout the chamber between the limits of 100° and

105°'' (p. 2, lines 76 to 78, James R. p. 674). Judged by the standards of that day and with the humidities of that day, that was a correct range in which operations could be conducted.

In 1923, however, Taggart (connected with petitioner) began investigating the effect of increased humidities. In 1928 his company was able to make definite recommendations that the humidity be increased. It was found, however, that with the increased humidity it was necessary to lower the air temperature 1° below the low limit set forth in the patent (Hall R. p. 48-49).

Taggart's testimony, quoted on page 30 of the Hall brief, that ''even with the proper humidity 99¼° is too hot for a Smith incubator'' was given in December, 1930 (*Waxham* R. p. 480 and 604). That was after the increased humidity was a regular practice with Smith incubators. By proper humidity Taggart was unquestionably referring to the humidity which was recognized at the date of his testimony as the best or ''proper humidity''. His testimony is therefore entirely consistent with the testimony which he gave in the Hall case when he said:

> ''As we have increased the humidity, changed the humidity, we have also changed the temperature so that at the present time in the Smith we recommend a temperature of 99° F. in the air.'' (Hall R. p. 46.)

There is a definite relation between humidity and temperature (Hall R. p. 48) as is readily understandable by the effects upon human beings of differences in humidities at the same temperature.

The testimony of Taggart on pages 47-49 of the record that in the days before higher humidities came into vogue the temperatures recommended in the Smith patent were actually used is uncontradicted in the record.

That such temperatures were entirely practicable and operative before and long after the date of the Smith patent is evident by the facts stated by this court in the Snow opinion (294 U. S. 7). Smith successfully operated his incubators from 1915 on (James R. p. 128); and his licensee, The Buckeye Company made and sold licensed incubators from 1917 on. Both Smith and his licensee made incubators of millions of egg capacity and they were successfully marketed and used by him and the customers of himself and his licensee for years with the temperatures set forth in the patent.

If one today would wish to go back to the lower humidities which were used at the date of the patent he could operate the same incubators practicably and successfully, at the temperatures stated.

The statement in Hall's brief (p. 40) that this Court and others have been deceived about the facts of temperatures is wholly unwarranted. The testimony of Taggart has been consistent throughout all of the cases. A comparison of the heat chart (Ex. 13 in the Hall case) with the corresponding charts in the Snow and Waxham cases (Exs. 3 and 4 in said cases, respectively) shows the identical heat curve.

We think this Court had in mind in the statement that the eggs reach "their highest temperature about the 17th day" (294 U. S. 5), the statement contained in the Smith patent that the eggs in the lower tilting trays, which are from fifteen to eighteen days in age, present the most difficult problem in combating excess temperatures. This statement is found on page 2 of the patent, lines 64-73 (James R. p. 674). Smith pointed out that the embryos within the eggs are in their most precarious condition from the fifteenth to the eighteenth day. After the eggs pass this point safely, the embryos are not so readily affected by differences in temperatures.

The preceding paragraph is an effective answer to the claim of non-infringement based upon the eighteen-day operations carried on by these Respondents. Respondents do not remove the eggs from the environment of the Smith invention until after this critical period has passed. In the operation of the hatching chamber by the Respondent Hall, the temperature is allowed to drop to 98° F. (Hall R. p. 64). In the operation of the James incubators the temperature in the hatching chamber is allowed to rise to 104° (James R. p. 331). This spread in temperatures at which these two Respondents operate their separate hatching chambers shows conclusively that an exact temperature is not a vital matter after the eighteenth day, but exact temperature *is* a vital matter before the eighteenth day and for this reason both Respondents use the Smith invention when they need it and discard it only after they can safely dispense with it.

Infringement.

Air Currents.

Respondent James seeks to avoid infringement upon the theory that he employs no current movement of air. The tests and charts which were made (James R. p. 686-710) conclusively show powerful air current movement equal to the current movement in the Smith machine. At a few spots the current is not more than 30 feet a minute, but these spots are confined to small areas in three trays only. In every other part of the incubator the air is moving in a positive stream and at most points at great velocity. Provision is made in the James structure for this positive air stream, structural provision which would not be present unless there were to be such a positive stream. It consists of the flues at front and back of the incubator and

extending from near the top to near the bottom. They have no purpose whatever other than to receive air from the rotary fan at the top and carry that air down to the bottom so that it may come up through the eggs to the fan again. The record evidence is that in these two flues the rate of air travel is 700 ft. per minute (*James* R. p. 90).

As to infringement by Respondent Hall, there can be no question that Hall infringes for the construction of the incubators which he employs is identical with the construction of the incubator held by this Court to infringe in the *Waxham* case (Hall R. p. 44).

Staged Incubation.

Both Respondents set their eggs in equal amounts at regular semi-weekly intervals to achieve a balance between the exothermic and endothermic eggs. There is sufficient heat given off by the eggs from eleven to eighteen days to upset the even running of the incubator were the capacity set all at one time. This is well shown by the unshaded area on the heat chart opposite page 60 of Respondent James' brief. James especially warns his operators and customers that they must practice staged incubation for if they do not set the eggs as he prescribes, "you cannot keep this cabinet down to temperature" (James R. p. 60).

18-Day Operation.

It is absurd to say that either Respondent does not hatch eggs by the use of its incubators. The eggs would never hatch had they not been in the incubator 18 days, during which time they were having the full benefit of the Smith invention.

Petitioner's Contentions in Prior Litigations.

At the argument of these cases before this Court in October, 1936, the suggestion was made by counsel for Respondents that in certain of the prior litigations of the Smith patent Petitioner contended for a scope of protection under the patent different from that now sought, and that Petitioner's change in this respect operates in some manner, not definitely indicated, to make the Hastings defense more effective now than it was in those prior litigations where it was considered and rejected. Our reply to this contention is two-fold; first, that there has been no change in Petitioner's contention as to the definition of the Smith invention and the scope of protection of the Smith patent throughout the fourteen years of the litigation of the Smith patent; and, second, that if there had been such a change at one time or another in the course of these fourteen years of litigation, that would be of no consequence whatever now in passing upon this Hastings defense.

The first two litigations of the Smith patent, the *Wolf* case (291 Fed. 252 and 296 Fed. 680) and the *Cooley* case (Appendix, p. i, and 17 F. [2d] 453) involved claims of infringement by reason of the use of incubators which were substantial duplicates of the commercial Buckeye incubators made under the Smith patent. In those cases the Hastings defense was presented, and, if it was a defense at all, it was as effective then against the method claim 1 of the Smith patent as it would be today. It was rejected in both cases on the broad ground that the Hastings incubators were failures in that no useful results whatever were attained in their use, and were abandoned because they were failures, and taught the practical art nothing whatever of value about practical mass incubation. Warned by the decisions in those cases, some of the manufacturers of incubators departed from the construction illustrated

and described by Smith in one respect or another, designed, as they thought, to escape from a charge of infringement. Therefore, the subsequent litigation of the Smith patent was concerned largely with whether or not these differing constructions of the competitors of Smith and his licensee were within the scope of protection of the Smith patent. It was on the issues thus presented that conflict arose between different Courts of Appeals, with the result that the *Snow* and *Waxham* cases were taken up by this Court on *certiorari* for consideration of the conflicting decisions.

Following the *Wolf*, *Cooley* and *Stone* cases, a number of suits were determined adversely to plaintiff upon varying contentions of non-infringement. In some cases the accused incubators were held not to infringe because of the absence of a "current" movement of the air, due either to the provision of stirrers or paddles which churned or agitated the air, or to the lack of guiding partitions. In other cases, the patent was restricted to an operation in which the current of air as it left the fan struck first the hottest eggs. These contentions of the defendants in the litigations referred to found some acceptance in the Courts by which they were considered. Limitation of the Smith patent in one or the other of the respects noted obtained acceptance in the *Petersime* suit (19 F. [2d] 721), in the *Blum* suit, (17 F. [2d] 456 and 27 F. [2d] 333), in the *Hillpot* suit (22 F. [2d] 855 and 24 F. [2d] 341), and in the *Snow* suit (70 F. [2d] 564).

On the other hand, both contentions of non-infringement were definitely rejected in the *Waxham* suit by the Special Master, the District Court and the Court of Appeals. It was this conflict between the rulings of the Courts of Appeals of the Eighth and Ninth Circuits which led to the grant of *certiorari* in the *Snow* and *Waxham* suits.

Throughout all of these litigations of the Smith patent it was a contention of the plaintiff that the Smith patent was valid and was entitled to enforcement commensurate

with the definition of the Smith invention in claim 1 of the patent, namely, the method of incubation characterized by the employment in combination of staged incubation and the maintenance of a continuous definite circulation of air through the mass of staged eggs in order to effect the requisite transfer of heat from the older eggs to the newer ones and maintain continuously the required conditions of moisture and fresh air within the space around the eggs. In other words, at no time in the course of the litigation of the Smith patent over the whole of this period of fourteen years has there been any change in the contention of the plaintiff with reference to what the Smith invention is, or what scope of protection Smith was entitled to under his method claim 1.

The consideration of the Smith patent by this Court in the *Snow* and *Waxham* cases in connection with the prior art practices and publications and the Lawry prior use which were before this Court in those cases, led to the rejection of those arguments of limitation of scope and resultant non-infringement on which the defendants had succeeded in the *Petersime, Blum, Hillpot* and *Snow* cases. In rejecting those contentions, this Court adopted and affirmed the contentions which Petitioner had consistently advanced as to the nature and scope of the Smith invention, stating its definition of the invention precisely in its opinion.

But even if, contrary to the fact, there had been some change in Petitioner's contention from time to time with reference to the scope of protection of the Smith patent, that would not be an item of consequence in these present proceedings. What constitutes the Smith invention, what are its essentials, and what range of variation of structure is permissible in practicing the invention, have all been definitely determined by this Court. They are not subjects for further contention now. The sole question now is whether or not that invention was made and used or was publicly disclosed by Hastings before it was made and

patented by Smith. It is on that issue and no other that the Court of Appeals in the instant cases ruled contrary to the Courts of Appeals which passed on the *Wolf* and *Cooley* cases. The adverse ruling of the Court of Appeals in the instant cases was made with no suggestion by that Court that the Hastings defense is any more or less effective here by reason of the definition of the Smith invention given by this Court in the *Snow* and *Waxham* cases and with no suggestion of any such contention to the Court of Appeals by counsel for these Respondents. The differing conclusions by the Courts of Appeals in the *Wolf* and *Cooley* cases on the one hand, and the Court of Appeals in the instant cases on the other, is that the former concluded that Hastings was never in possession of the Smith invention and did not make use of it in his Davis and Muskogee incubators and did not disclose it in his abandoned application and his publications and failed in his efforts to practice mass incubation, whereas the latter held that Hastings did possess the invention and did put it in use and did disclose it adequately. That is a conflict of decision which has no relation whatever to contentions, harmonious or otherwise, which counsel for Smith have made in these several litigations as to what is the proper scope of protection of the Smith patent.

The Canadian Decision.

Since this case was set down for re-argument the Supreme Court of Canada has reversed the decision of the Exchequer Court, portions of which, dealing with Hastings, are contained in the appendix to our main brief. The Supreme Court held the Smith patent in Canada invalid on the Hastings' prior use at Muskogee, Oklahoma. Steps have already been taken for appeal to the Privy Council.

There are several considerations in the Canadian situation which deprive that decision of any effectiveness on the situation presented by the records here.

The primary reason the Canadian decision should not be considered at all persuasive in the instant cases, is that the record in Canada does not contain the testimony of Lieber, which, as pointed out above (p. 29-33), is directly contradictory to the testimony of Hastings on the vital question of the method of operation employed by Hastings at Muskogee. Lieber was the only witness who testified in the instant cases, except Hastings, who knew how the incubator at Muskogee operated. Lieber testified that the Muskogee incubator was operated by filling each of the seven chambers with eggs of the same age, shifting each group of eggs to the next chamber at the end of short periods, and progressively increasing the temperature in the several chambers in accordance with the ages of the eggs therein. The temperature adjustment was accomplished by adjusting the valves from the common air duct, so that varying quantities of air were admitted to the chambers. This method followed the teaching of the prior art and differed radically from the method perfected by Smith, as has been pointed out. Lieber's testimony not being in the record of the Canadian case, there was no contradiction of the claims of Hastings that he set the eggs in staged incubation in the several chambers at Muskogee.

Being without information as to the method actually employed by Hastings, the Canadian court construed the equivocal passage from the attorney's brief in the abandoned patent application as descriptive of the method of the Smith patent, whereas, had the Court been informed of the facts, it would have perceived that that passage was equally consonant with the Hastings method as described by Lieber. As the only method of operation which was described to the Court was found in Hastings' testimony, it is not surprising that this error was committed.

So, also, the writings and publications sponsored by Hastings were held to corroborate Hastings' testimony and those pertinent passages which point directly to the actual

Hastings method were either overlooked or their significance unappreciated.

The lack of adequate disclosure of the Muskogee incubator is evident from the description of the incubator given by the Canadian Court. No mention whatever is made of the slide dampers at the top of the several chambers by which Hastings controlled the amount of air entering the several chambers so as to effect the progressively increasing temperatures of the several chambers. As a result, the Court entirely missed the significance of the several individual incubating chambers. As shown by the passage: "Although seven incubating chambers are shown, it was one hatching operation all carried on in the same room," the Canadian Court considered that this division of the incubating operation in the seven chambers was without any significance and regarded the operations as a unitary one. The Court did not inquire as to the reason for dividing the installation into the seven different chambers, nor did it apparently realize that there was a real purpose and intent in the mind of Hastings in segregating the eggs by ages into seven groups, each subjected to air at different temperatures.

The Court accepted the statement of Hastings that the "conception of his invention was to 'equalize the temperature in a large room' through the means adopted and used by him", as referring to the entire installation, whereas, viewing the several chambers as one installation, the air temperature was not the same throughout. While Hastings may have sought to equalize the temperature in each chamber, his scheme was to have each individual chamber at a different temperature from every other chamber. This is a radically different conception from keeping all of the chambers at the same temperature.

The distinction is vital when we consider Lieber's testimony in the James record, in which it is shown that Hastings filled each chamber with eggs of one age, for in that

operation the old and new eggs are not subjected to one body of air at one temperature. Lieber repeatedly testified that the temperature in each chamber was different from the temperature in the other chambers and that he knew about the operations for he was "there every day" (James R. p. 615). The essence of the Smith invention is the application to the eggs in various stages of incubation, endothermic and exothermic alike, to the same body of air at the same temperature, and in the Hastings method this was neither contemplated nor performed. As we pointed out above, the testimony of Lieber is supported by the "Poultry Culture" article quoted in full on page 33 of this brief. It was written contemporaneously with the building and installation of the Muskogee incubator and is acknowledged by Hastings to be "a description of the plant as I had built it" (James R. p. 520).

Without the testimony of Lieber, this passage has no significance, but, when the true Hastings operation as described by Lieber is understood, this passage immediately assumes its proper significance.

On the vital question of setting the eggs, Hastings testified in the James case that he "inter-spaced" trays holding the fresher eggs with trays holding the older eggs and when the eggs were ready to hatch he moved them to the bottom of each chamber (James R. p. 535-536). This statement was directly contradicted by Lieber who testified (James R. p. 627): "he would put the eggs in the first one, and keep on moving them, and he would be putting eggs in the first compartment and taking chicks out of the last one at the same time. And in the intermediate compartments would be eggs further advanced in the incubation." On page 782, Lieber said: "if he had many eggs, it would be necessary to transfer the eggs of a certain stage of incubation all into one compartment." The Canadian Court did not have this testimony before it.

Instead the Court accepted the deductions made by Hastings, that as he knew about the changing thermal conditions of eggs in various stages of incubatio· "he would naturally place his eggs as they were in the various stages so that he did not have too many eggs in the latt·r stages of incubation in one general mass", as establishing the fact that he set eggs of different ages in proximity and thus subjected eggs of all ages to the same air temperature, whereas Hastings' conception was the antithesis of this operation. While Hastings may have known much about the development of heat in eggs during incubation, that is no indication that he conceived the idea of utilizing that phenomena of nature by balancing the endothermic and exothermic eggs in a single chamber.

The Canadian Court said that "Hastings' description of his apparatus and his story of his method of operation is corroborated by the witness Norman Hickox." As is shown by the record in the James case, Hickox knew nothing about incubation, and professed no knowledge of the mode of operation of the Muskogee incubator. He did testify about the pictures which he took of the outside of the incubator, but he was not familiar with its interior construction, the manner of setting the eggs or the control of the temperature. Hickox was merely the "contract agent or commercial manager" of the electric company which supplied the power and light for the Hastings establishment (James R. p. 598), and the pictures and articles written by him do not describe the setting of the eggs in staged incubation in the various chamber, nor do they refer to the temperature within the egg chambers. It is unbelievable that Hickox would retain to this day the detailed knowledge necessary to enable him to support the testimony of Hastings on the vital elements of egg setting and air temperature. With regard to the setting of the eggs, the article written by Hickox (Ex. 26-A, James R. p. 1121)

is identical with the corresponding passage in "Poultry Culture", for both articles are quite specific that the operation "will require two compartments for the actual hatching out of the twenty trays incubated in one compartment." This definitely contradicts Hastings' testimony that he hatched at the bottom of each compartment and is wholly inconsistent with his testimony that eggs of the same age were scattered through all of the compartments.

It is also stated by the Canadian Court that "The conception claimed by Hastings in the course of his evidence was implicitly disclosed in the specification written by himself to accompany his original application." Nothing could be wider of the mark, for it is quite apparent from the application itself and is admitted by Hastings (Hall R. p. 55), that the application, as prepared by him and filed in the Patent Office, contained no disclosure of "staged incubation."

This discussion of the lack of staged incubation in the individual chambers, and the careful regulation of the several chambers at different air temperatures, leads to the conclusion that the Canadian Court failed entirely to apprehend or appreciate the limitation in claim 1 of the Smith patent, that the current of air is of "sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature."

The Canadian Court made extensive quotations from the decision of this Court in the *Snow* case. Upon that Court's erroneous conception of Hastings' method, based upon lack of knowledge of the actual process as it was carried out, such quotations were apposite. Had the Canadian Court had the benefit of the more complete testimony in the records before this Court, its conclusion should and, we think, would have been different.

The Canadian Court excused the financial failure of the Muskogee project, but it did not mention or excuse its operative failure. The testimony of Hastings that:

> "The hatching records as a whole for that plant were not high and there were many individual cases of very poor results. I should judge that the hatching record of the whole would run around 40 per cent" (Appendix, p. xxxv).

appears to have been entirely disregarded. This Court will probably recall that at the hearing in October, in response to a question from the Bench, counsel for Respondent James stated that a successful hatch should average 65 per cent. The operative failure which Hastings' testimony depicts was the direct and immediate cause of the financial failure. All who had anything to do with Hastings in any of his experimental installations lost everything they put into the ventures. Such consistency of failure is explainable only upon practical and operative failure due to erroneous principles lying at the foundation of Hastings' experiments.

The Court also refers to "the incidental expense of a new and untried venture", but nowhere in the records is there any suggestion that Hastings was ever subjected to any limitation of funds which affected the construction of his incubator or his method of operating it.

The Canadian Court stated "we have no reason to decide that Hastings' evidence was not trustworthy", but accepted his testimony which, in the absence of the fuller understanding of the Muskogee operations, gave the requisite color to the equivocal passage from the Hastings file wrapper. The Court appears to have been unaware of Hastings' admission that he is antagonistic to Smith (*Hall* R. p. 64; *James* R. p. 579).

Also, the Canadian Court appears not to have known of the statement by Hastings that it was not until 1918, at

Tiffin, Ohio, after he learned about the Smith invention, that he "tried out a method of hatching very much more like the Smith-Buckeye devices than I have used in the past" (*James* R. p. 577).

This opinion of the Canadian Supreme Court cannot properly be said to be in accord with the views expressed by the Court of Appeals in the instant cases or with views urged on this Court by Respondent's counsel. Here this Court is told that " 'The Dollar Hen' is an anticipation by its disclosures of the Smith patent" (James Brief, p. 19), whereas the Canadian Supreme Court dismissed it from consideration with only the passing comment that it describes "in a rough and general way what he considered his invention".

As to the Court of Appeals, its decision adverse to the Smith patent was founded primarily upon the Hastings Davis incubator. That was said by the Court of Appeals to have been "an operative success" and to have been used "during the hatching seasons of 1910 and 1911", though it was not built until February, 1911. In Canada, nothing was said about the Davis incubator except that "it is not relied on by the Attorney General". It seems reasonable to infer that those in charge of the litigation against the Smith Canadian patent considered the history of the Hastings' Davis incubator and concluded that it was useless to present it as defense material. Such a conclusion would have been in accord with that of the defendant in the James suit at bar for defendant James offered no corroborating proof in support of the Hastings' use at the Davis farm.

Comparative History of Smith and Hastings.

The history of the development of the Smith invention was laid before this Court in the *Waxham* case and also

in the *Snow* case. Brief reference to this history in comparison with that of Hastings is illuminating.

Smith started his experiments on mass incubation in the year 1906 when at Lykens, Ohio, he built a large incubator. His first ideas were that he could successfully incubate a large number of eggs by the use of forced draft alone. He placed 30,000 eggs in this incubator and received about 30 chicks. This experience bankrupted him (Waxham, R. p. 547).

In 1912, he resumed his experimentation and, still convinced that the forced draft of air would solve the difficulties, he built a 12,000 egg incubator at Attica, Ohio, equipped with a fan. He started one hatch in this incubator but never finished it (Waxham, R. p. 548). In the early part of 1913, he built a three-compartment incubator and moved it to Cleveland and operated it in 1913 and 1914. This is the incubator which was claimed in the *Snow* case to invalidate the Smith patent. This Court found that it did not because, while it employed fans in each compartment, the eggs in each single compartment were not set in staged incubation. The compartments were set at different times, so, viewing those compartments as forming a single incubator, there was of course the setting of eggs at regular intervals. But this Court held that the patent was not invalidated because "there was no staged incubation in any single compartment" (294 U. S. 16). The results were not successful. Dr. Smith testified in the Snow case that he got a 40 to 45 per cent. hatch (Snow, R. p. 138). Then Smith conceived the idea of setting the eggs in the individual chambers in "staged incubation" as defined by this Court and increasing the fan capacity in the chambers. He first hatched by this new method in 1915. His success was immediate and certain. The addition of staged incubation was the final touch. It turned failure into success.

At the end of 1915 season, Cugley, president of the Buckeye Incubator Company, heard of the remarkable results Smith was securing and went to Cleveland to examine his incubator and witness its operation (Waxham R. p. 518). The following year that company made some experimental machines and then negotiated the license under which it has since operated. Later, Smith organized his own company and has been successful ever since in a very great measure.

The point which we are attempting to make by this brief history is that there is no excuse which can condone Hastings' failure, judged by Smith's history. The rich reward which fell to Smith would have fallen upon Hastings had Hastings solved the problem of mass incubation.

The situation of Smith in 1913 and 1914 is exactly parallel to the situation of Hastings at Muskogee in 1912. Each had separate egg chambers, each had means for creating a circulation of air. Smith's was probably more efficient. Each set the eggs in a single chamber at one time. Each got about 40% to 45% hatch. At this point each was a practical and operative failure. But Hastings was discouraged and stopped while Smith persisted. Smith conceived the brilliant idea of combining the setting of eggs in staged incubation in a single chamber with forced circulation of air for maintaining the proper conditions of temperature, moisture and fresh air. Immediately his difficulties were over. Had Hastings achieved that idea, he would have reaped the fortune which came to Smith, for he lacked none of the publicity which would put financial support at his disposal had he been able to show that he had solved the problem.

The saying, "by their fruits, ye shall know them" is no more aptly illustrated than by this brief comparison. Comparison of the practical results of Hastings and Smith must be convincing that Hastings lacked something and it was

the lack of that final touch of genius that accounts for the failure of all of Hastings' efforts.

Respectfully submitted,

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DEAN S. EDMONDS,
ALBERT L. ELY,
Counsel for Petitioner.

New York, N. Y.,
March 31, 1937.

MAY 11 1936
CHARLES ELMORE CROP
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IN THE

SUPREME COURT OF THE UNITED STATES

October Term, 1935.

No. [redacted] 35

SAMUEL B. SMITH,
Petitioner,

v.

A. B. HALL and L. C. HALL, d. b. a. HALL BROTHERS,
Respondents.

BRIEF FOR RESPONDENTS.

ARTHUR E. PAIGE,
FRANK E. PAIGE,
Counsel for Respondents.

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IN THE

Supreme Court of the United States

October Term, 1935.

No. 949.

SAMUEL B. SMITH,

Petitioner,

v.

A. B. HALL and L. C. HALL, d. b. a. HALL BROTHERS,

Respondents.

BRIEF FOR RESPONDENTS.

To the Honorable, The Chief Justice and Associate Justices of the Supreme Court of the United States:

The Parties.

Petitioner trades as The Smith Incubator Company at 3108-3136 West 121st Street, Cleveland, Ohio, where he has a "Legal Department" under the supervision of his witness Joseph I. Taggart, occupied in prosecution of approximately four hundred separate suits involving the same subject matter as the suit against Hall Brothers,

and in manufacturing and distributing to 21,800 persons (on a mailing list including all persons engaged in the business of hatching chicks in the United States), a printed periodical entitled "Smith's Chickagrams", and circulars and letters warning the addressees against the purchase or use of any incubating apparatus other than that offered for sale by Petitioner's company.

These Respondents have a farm at Wallingford, Connecticut, where, before this litigation, they conducted what was said by Petitioner to be the largest chicken incubating business in the East. These Respondents have no connection whatever, either directly or indirectly, with James Manufacturing Company and Elmira Hatcheries, Incorporated, Respondents re No. 950. The Court below, as a matter of convenience, heard arguments in both cases upon the same day, to wit, February 14, 1936, and filed Opinions in both cases upon the same day, to wit, April 6, 1936. Whereupon, your Petitioner, Samuel B. Smith, mixed the subject matter of the two separate suits in the Court below in a single Petition for writ of certiorari.

Questions Involved.

The issues raised in the Court below were limited, at the trial, to the questions of validity and infringement of the claim 1 of Letters Patent of the United States No. 1,262,860 granted April 16, 1918, to the Petitioner, as assignor to The Buckeye Incubator Company, a corporation of Ohio, for Incubator, and alleged to have been re-assigned to the Petitioner subject to a license to, and an agreement with, the original patentee corporation. That claim is not for the incubator structure disclosed in said patent, for which other claims were granted, but is for a "method of hatching", and the charge of infringement of that claim is based upon the use by Respondents of various different incubator structures manufactured under Letters Patent of the United States Reissue No.

18,984 dated October 31, 1933, granted to John L. Robbins, of Edgewater, Colorado, for Incubator, (upon surrender of original Letters Patent No. 1,728,980 dated September 24, 1929), and purchased by Respondents from the manufacturer, The Robbins Incubator Company, of which the patentee Robbins is the president and proprietor. Said manufacturer has not appeared in this litigation.

"Prior Decisions of Other Courts."

The statement on page 3 of the Petition under that heading "These decisions in the Second Circuit are the first in which the Smith patent has been held invalid", is untrue.

The statement in line 10 et seq. on page 7, of said Petition, "In all suits excepting only the present ones, the validity of the patent has been sustained.", is untrue.

This Court was deceived by similar statements on behalf of Smith in the *Snow* and *Waxham* suits, cited on p. 3 of the present Petition. Several other Courts have been similarly deceived.

Respondents' Exhibit H, reproduced on printed page 355 of the Transcript of Record in the Hall case, is a certified copy of the decree of Judge J. L. Bodine, of the District Court for the District of New Jersey, in Buckeye Incubator Co. and Samuel B. Smith v. William F. Hillpot, 22 F. (2d) 855, from which Petitioner appealed to the United States Circuit Court of Appeals for the Third Circuit, which decree was affirmed, as reported in 24 F. (2d) 341. That decree specifically states *"Second, that said patent does not disclose a successful method of operation and, consequently, method claims 1 and 2 thereof are invalid and void."* That fact is certainly within the knowledge of all of Counsel for Petitioner who endorsed and verified the present Petition. Moreover, Charles Neave, who endorsed said Petition as leading counsel, was

the leading counsel for Petitioner in prosecuting the appeal from that decision of Judge Bodine.

NOTE: It is significant that since that decree was affirmed by the United States Circuit Court of Appeals for the Third Circuit, as reported in 24 F. (2d) 341, the records of both that decree and the opinion upon which it was predicated, theretofore included in the archives of said District Court at Trenton, New Jersey, have been changed, by mutilation and partial obliteration, to eliminate the "Second" item of said decree, exemplified by said Defendants' Exhibit H; such change being in violation of R. S. Sec. 5403, Act of March 4, 1909.

Certainly, that violation was not of advantage to any one but Petitioner, as against the general public.

It is untrue, as stated in line 17 et seq. on page 3 of said Petition, that "The decisions against validity were based entirely upon alleged prior invention and prior use by one Milo Hastings."

The decisions in the Court below were based upon new evidence showing not only prior *invention* and prior *use* but also prior *sale* of the subject matter of Petitioner's claim 1, by Milo M. Hastings to Respondents' witness Walter B. Davis.

It is true, as stated in lines 3 to 7 inclusive on page 4 of the Petition, that "The Hastings prior use and publications purporting to describe it and a prior abandoned application for patent filed by Hastings were not in the records in the *Snow* and *Waxham* suits, but they have been known in the litigation on the Smith patent from its inception."

It is untrue, as stated in lines 4 to 6 inclusive on

page 6 of the Petition, that "The evidence in support of this Hastings defense was substantially the same in all of these cases in which that defense was urged."

Neither Milo M. Hastings, nor any other of Respondents' witnesses, testified in the cases against *Wolf* (cited on Petition p. 4) or *Stone* (cited on Petition p. 5).

It is true, as stated in line 26 et seq. on page 10 of Petitioner's Brief, that "The records in the Snow and Waxham suits did not include any of the Hastings publications or testimony about what was done by Hastings, so this Court did not pass on the specific matters of defense which were upheld by the Court of Appeals of the Second Circuit."

It is untrue, as stated in line 9 et seq. on page 12 of Petitioner's Brief that "The evidence dealing with the Hastings defense was in substance the same in these *Wolf* and *Cooley* cases as in the suits at bar against *Hall* and *James.*"

It is untrue, as stated in line 21 et seq. on page 15 of Petitioner's Brief, that "In summary, the records in these several suits relating to the Hastings defense were *the same in substance* as those before the Court of Appeals for the Second Circuit in the suits at bar;". (Italics ours.)

Such reiterated assertions on behalf of Petitioner, to the effect that the evidence in the instant Hall case as to the activities of Milo M. Hastings and his dealings with Walter B. Davis, at 23rd Street and Kings Highway, Brooklyn, New York, in 1910 and 1911, was substantially the same as in prior litigation, are untrue. Although the fact of Hastings' activities there was recognized in prior litigation, the legal aspect of said activities and the evidence of his contract with Davis concerning the same, as presented in the Hall case, are new and essentially different from what was presented in any prior litigation.

No such evidence was ever presented to any Court prior to the trial of the instant Hall case.

Smith's Claim 1.

"1. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a current of heated air, said current being created by means other than variations of temperature and of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified."

COMPARISON OF SMITH'S CLAIM 1 WITH THE NEW EVIDENCE OF RESPONDENTS.

Elements of Structure Required by Said Claim.

(a) means for supporting eggs "at different levels" in

(b) "a closed chamber having"

(c) "restricted openings"

(d) "means other than variations of temperature" for "applying a current of heated air" throughout the chamber

(e) means for maintaining the air "at substantially the same temperature".

Each of said elements of structure required by the claim in suit was present in the incubator which Milo M. Hastings built and operated for Walter B. Davis at least as early as the Spring of the year 1911. The testimony adduced by Respondents with reference to said respective elements of structure is as follows:

(a) Testimony of Hastings (Trans. p. 78, f. 234); of Mr. Davis (Trans. p. 88, f. 264); of Mrs. Davis (Trans. p. 93, f. 277).

(b) Testimony of Hastings (Trans. p. 78, f. 234); of Mr. Davis (Trans. p. 87, f. 261); of Mrs. Davis (Trans. p. 93, f. 277).

(c) Testimony of Hastings (Trans. p. 80, f. 238); of Mr. Davis (Trans. p. 87, f. 261); of Mrs. Davis (Trans. p. 93, f. 277).

(d) Testimony of Hastings (Trans. p. 78, f. 234, 237); of Mr. Davis (Trans. p. 87, f. 260).

(e) Testimony of Hastings (Trans. p. 79, f. 237); of Mr. Davis (Trans. p. 87, f. 260-262).

Elements of Operation Required by Said Claim.

(f) "hatching a plurality of eggs"

(g) "escape of foul air"

(h) "applying a current of heated air"

(i) "maintain the air throughout the chamber at substantially the same temperature"

(j) maintaining in the same chamber *during the hatching*, eggs of "more advanced stage of incubation" with others "in a less advanced stage".

(k) carrying "units of heat" "from the eggs in the more advanced stage of incubation to those in a less advanced stage", *during the hatching*.

Each of said elements of operation required by the claim in suit was included in the method of hatching in which the Hastings incubator aforesaid was used in the Spring of 1911. The testimony adduced by Respondents

with reference to said respective elements of operation is as follows:

(f) Testimony of Hastings (Trans. p. 78, f. 232-235); of Mr. Davis (Trans. p. 88, f. 264); of Mrs. Davis (Trans. p. 92, f. 276-277).

(g) Testimony of Hastings (Trans. p. 80, f. 238); of Mr. Davis (Trans. p. 87, f. 261); of Mrs. Davis (Trans. p. 93, f. 277).

(h) Testimony of Hastings (Trans. p. 78, f. 234, 237); of Mr. Davis (Trans. p. 87, f. 260).

(i) Testimony of Hastings (Trans. p. 79, f. 237); of Mr. Davis (Trans. p. 87, f. 260-262).

(j) Testimony of Hastings (Trans. p. 78, f. 234, p. 80, f. 239); of Mr. Davis (Trans. p. 88, f. 264); of Mrs. Davis (Trans. p. 93, f. 277).

(k) Testimony of Hastings (Trans. p. 79, f. 237-239); of Mr. Davis (Trans. p. 87, f. 261, 264); of Mrs. Davis (Trans. p. 93, f. 277).

Therefore, regardless of the status of Hastings' application for Letters Patent, his reduction to practice of his invention disclosed in the Official record relating to that application, which reduction was effected prior to the filing of that application as proven by the testimony of Hastings and Mr. and Mrs. Davis, was a clear anticipation of the alleged invention of the Petitioner Smith defined in claim 1 of the patent in suit as interpreted by this Court.

The Claim in Suit is Invalid and Void In View of R. S. 4886.

The testimony of Hastings and Mr. and Mrs. Davis is clearly to the effect that the invention of the claim in suit was not only known to others in this country long

before the Petitioner Smith's alleged conception thereof, in the "Spring of 1914" but was in long continued public and successful commercial use, in this country, more than two years prior to Petitioner's application for the patent in suit, which was not filed until October 26, 1916.

DISCLOSURES IN THE UNITED STATES PATENT OFFICE RECORDS RE APPLICATION SERIAL NO. 624,885 FILED MAY 3, 1911, BY MILO HASTINGS FOR HATCHERY FOR THE EGGS OF DOMESTIC FOWL.

Defendants' Exhibit F (Trans. pp. 317-354) is a photographic reproduction of said records. Said application was filed by Milo M. Hastings during the time he was employed by Walter B. Davis in building and operating said incubator at Davis' poultry farm in Brooklyn, New York, beginning in December, 1910, and continuing in 1911. (See Trans. p. 78, f. 232-236, and p. 82, f. 245).

Consequently, that Patent Office record, Defendants' Exhibit F, is documentary evidence contemporaneous with the events alleged in the testimony of Respondents' three witnesses, Messrs. Hastings and Davis and Mrs. Davis. It discloses every feature of said Smith claim 1, as follows:

> (Trans. p. 321) "My invention is that of a hatchery in which I secure better ventilation and a more uniform temperature throughout the hatching chamber by substituting a forced draft for gravity drafts."
>
> (Trans. p. 322) "Ventilation I secure through cracks around the door of the hatching chamber or other small openings in any part of the air circuit. The air being constantly in motion, requires less rejuvenation than dead air."

(Trans. p. 342) "The problem has been to enable the incubating operations to be carried on continuously, if so desired, with eggs at all stages of development, and with all of a vast number of eggs subjected to the same temperature and atmospheric conditions best adapted for the development of the embryo."

(Trans. p. 343) "In practice it is found that with vast numbers of eggs assembled in a single compartment and with eggs at all stages of incubation but very little extraneous heat need be supplied, because the eggs in the later stages of development supply the necessary heat for the eggs in the earlier stages of development. In practice, however, a source of heat is always maintained in order to permit of proper regulation."

(Trans. p. 344) "The simple way in which applicant overcame the difficulty was through the provision of a mechanically operated air forcing means which would force a rapid circulation of air through the whole collection of eggs in the chamber and past the heater. The mechanical air forcing means is an essential factor, if heat is to be conserved and the conditions maintained uniform; for a circulation, which is due to differences in temperature in different portions of the circulatory system, as, for example, where the air is circulated by the effect of the heater in causing the heated air to rise and pass into or through the incubating chamber, will not answer for large collections of eggs."

(Trans. p. 346) "In the Hastings hatchery, a current of air is blown past each and every egg at the rate of thirty feet per minute and this rapidly moving air quickly bringing the temperature of the egg to approximately that of the air. This method

of heating keeps the temperature of the eggs in the advanced state of incubation down within a few degrees of that of the air, the exact difference being regulated at will by adjusting the speed of the fan. When properly adjusted the same blast of air used to heat fresh eggs does equally well for eggs in the advanced stages just as the same temperature of the body of the hen incubates the eggs at all stages of development, without recourse on the hen's part to the 'hatching fever', erroneously supposed to explain the higher temperature of eggs at a more advanced stage of development. Owing to this fact eggs at all stages may be handled simultaneously with uniformly good results."

"The operator of a Mechanical Draft plant may switch as much 'fresh' or outdoor air into this inner circulation as he is willing to heat. The inventor's practice is to use but a small portion of outdoor air except in cases of excessive humidity, when a large exchange of air is utilized as a simplest means of increasing evaporation."

(Trans. p. 347) "The introduction of moisture from the mist spray nozzles in the fan boxes to increase humidity, or running in outside air to decrease it as indicated by egg weights or air cell shrinkage is sufficient for ordinary hatching practice."

It appears from the first two paragraphs above quoted from that Patent Office record, which were in the original application as filed by Hastings, that he considered the most essential feature of his invention to be the circulation in an incubator chamber of a current of heated air by means other than variations in temperature. His attorneys Church & Church evidently agreed with him, for they made no effort to claim for him that feature in associa-

tion with eggs in staged incubation although not only that combination but its various advantages were clearly disclosed to them, as appears from the other quotations from that record, supra.

Nevertheless, the Official record relating to said application is unquestionable evidence that the invention described in claim 1 here in suit was not only clearly disclosed therein but "known to others" than Smith long before the latter's alleged date of conception thereof in the Spring of 1914; those others including Milo M. Hastings, the *five* witnesses to his application, to wit, Edgar Chambless and Jeannette Cohen (Trans. p. 322), J. P. Gannon (Trans. p. 323), Walter B. Davis, and Isabel E. Carkhuff (Trans. p. 354); his attorneys, Church & Church, and their employes who typed and compared the brief of Church & Church presented to the Board of Examiners-in-Chief; and the Primary Examiner, G. R. Ide, and his assistants who prepared and filed the "Examiner's Statement" (Trans. pp. 338-339), and the *three* Examiners-in-Chief.

In accordance with the reasoning of this Court in the *Snow* case (No. 102, October Term, 1934, Plaintiff's Exhibit 2, Trans. p. 145) Mr. Hastings' application should have been allowed and Letters Patent granted to him instead of to the Petitioner who adopted Hastings' invention after it was in public commercial use and articles concerning it widely published (Trans. p. 94, f. 280-282) in periodicals of the poultry industry of which there are numerous examples (pp. 296-300, 302-303) in the Transcript of Record of the *Cooley* case, of which Defendants' Exhibit F is a part. Of course, Hastings forfeited his right to obtain Letters Patent for the invention in question by abandoning his application, but, he abandoned it to the public generally and not to the Petitioner Samuel B. Smith exclusively.

Hastings was but twenty-seven years old and pre-

pared said application himself, without any previous experience in such matters. Consequently, the application papers which were filed in the Patent Office on April 25, 1911, were objected to as informal, and his application was not accepted for filing until he had corrected those informalities on May 3, 1911. It may be observed that the Official letters to Hastings during the prosecution of said application were addressed to him at the address of the Davis Poultry Farm where he was operating the incubator in accordance with the new evidence aforesaid.

In view of the argument in the paragraph beginning with line 10 on page 25 of Petitioner's Brief, to the effect that the disclosures in said application above quoted did not relate to the single closed chamber type of incubator Hastings had built for Davis, but related to the different type of incubator which Hastings later built at Muskogee which "was operated upon the principle of filling each of several chambers with eggs of the same stage of advancement in incubation, shifting the eggs to other chambers and *increasing the temperature of the chambers as the eggs advanced in maturity.*"; attention is called to the fact that on April 25, 1911, Hastings' Petition, part of said application, was filed in the Patent Office (Trans. p. 318) with a drawing which is reproduced on Trans. p. 354, showing a *single* closed egg hatching chamber A with restricted openings for ingress and egress of air; an electric fan B for forcibly circulating air in said chamber, and means for heating the air in said chamber including the flue C and the gas burner D, which is an incubator of the type Respondents' three witnesses Hastings, Davis, and Mrs. Davis testified was built at the Davis Farm. Therefore, Petitioner's argument aforesaid is absurd.

JUDGE MANTON'S COMMENT.

On page 405, line 28 et seq. of the Transcript of Record in the Hall case, Circuit Judge Manton states "An

article in Poultry Culture, describing the later operations of Hastings at Muskogee, said: '* * * the moving air adds to or removes heat from the eggs with great rapidity. Because of this fact, eggs at all stages can be placed in the same trays of the Hasting Hatchery with little or no injury. Mr. Hastings hatched several thousand eggs under such conditions in his Brooklyn (Davis) plant last year.' *This was published before any motive for so declaring could be possible.*" (Italics ours.)

That reference was to the issue of the publication "Poultry Culture" dated "February, 1912", identified as Vol. XV, No. 5, and the quoted text appears in the second paragraph, of the reproduction of said publication, on page 298 of the Transcript of Record in the *Cooley* case, which Record contains Respondents' "Defendants' Exhibit F."

That comment by Judge Manton is equally applicable to the statements appearing in the record of Hastings' application hereinbefore quoted, for they were all recorded in the Patent Office before the end of the year 1912, whereas, Petitioner Smith does not claim to have even conceived the invention of the patent in suit until the "Spring of 1914" and did not in fact file his application for that patent until October 26, 1916.

It is submitted that the unanimous decision of the three Judges of the Second Circuit which Petitioner seeks to have reviewed and set aside, was fully justified by such new evidence, and that because it was predicated upon evidence never before considered by any Court, there is no real conflict between that decision and the prior decisions cited in said Petition and Brief.

NEW EVIDENCE OF INSUFFICIENCY OF DISCLOSURE IN THE SMITH PATENT 1,262,860.

Said patent does not include sufficient information to enable anyone to effect the "method of hatching" contemplated in claim 1, without experimentation to determine to what degree the air circulated in the incubator must be heated to effect such hatching. The Petitioner Smith himself was uncertain as to that, for, on page 2, line 8; page 2, line 21; and page 5, line 9 of his original specification as filed October 26, 1916, (a copy of which is included between pages 421 to 465 inclusive, in the *Cooley* Transcript of Record containing the present Defendants' Exhibit F), Smith stated the maximum temperature permissible with his method of hatching to be 106° F.; but, by the amendment which is Paper No. 3 filed March 6, 1917, nearly five months after his application was filed, Smith changed that limit to 105° F. *Both were wrong. The highest temperature permissible is 99° F.*

In his original specification, Smith claimed that his invention provided "means to *heat the eggs uniformly*". See particularly original claim 11. Smith added to that, by amendment filed March 6, 1917, the statement which appears in line 48 et seq. on page 1 of the patent in suit "It is manifest that the temperature will remain practically the same throughout the column of eggs". *Neither statement is true. Both are contradicted by* Petitioner's witness Taggart (Trans. p. 69, f. 207-209) with reference to Plaintiff's Exhibit 13 (Trans. p. 180).

In Paper No. 4 which is dated March 24, 1917, the Official Examiner objected "The temperature of the air is not the same throughout the column, since the temperature is raised by the lower trays of eggs and diminished by the upper, so that the temperature is higher part way up the tier at either the top or the bottom." However, Smith failed to correct either of his erroneous statements above quoted.

The only information, in said patent in suit, as to the temperature *of the air* to be maintained during the method of hatching of Petitioner's claim 1, is in the statement in line 40 et seq. on page 1 of said patent, as follows:

> "The temperature of circulating air should be such as will prevent the eggs in the early stage of incubation from falling below 100°."

That statement is also untrue for, as admitted by Petitioner's witness Taggart (Trans. p. 70, f. 210-211), the air must be at a temperature of at least 100½° F., perhaps 100¾° F., to prevent the eggs in the early stage of incubation from falling below 100° F., and, as admitted by Taggart (Trans. p. 72, f. 214), "if you subjected eggs to such a temperature of air that they do not fall below 100° F. in the early stage or first ten days, *it would be fatal to practically all of the eggs.* That was my discovery. In the Waxham case I testified that '*Even with the proper humidity, 99-1/4° is too hot for a Smith incubator*'." (Italics ours.)

Therefore, it is unquestionable, in view of the testimony of the Petitioner's own witness Taggart, that the success or failure of the method of hatching, subject matter of claim 1 in suit, is dependent upon precise determination and maintenance of the critical correct temperature of the air less than 99¼° F. in the closed chamber where incubation is being effected, but the patent in suit not only fails to afford that information, but clearly and specifically directs the performance of that method under different conditions at a higher temperature which said witness Taggart admits would be "fatal to practically all of the eggs". The reasonable inference is that the Petitioner Smith himself did not know, even as late as the issuance of his patent on April 16, 1918, that an air temperature of

99° F. *must be maintained* in the "closed chamber" to effect the method of hatching of claim 1 in suit.

That reasonable inference is made a certainty by the testimony of Petitioner's witness Taggart (Trans. p. 72, f. 216) that *it was not until the year 192:* that *he, Taggart,* by a series of experiments and tests, determined and disclosed to Smith incubator users that the teaching of the patent in suit was erroneous, and that the maximum temperature of the air which it was safe to use in the method of hatching of claim 1 in suit was but 99° F. As he testified (Trans. p. 72, f. 214) "Even with the proper humidity, 99¼° is too hot."

It appears from the foregoing comparison of the disclosures of the patent in suit with the scientific facts to which Petitioner's witness Taggart testified, that Smith not only failed to disclose the correct use of the incubator structures disclosed in his patent, but gave clear and specific instructions for use thereof which are not only misleading but fatally defective.

Consequently, Petitioner's method claim 1 is invalid and void because his disclosures in the patent in suit as to the operation of the *only incubator* therein shown are not only insufficient to effect the method of hatching contemplated in said claim, but would prevent any *hatching* of eggs treated in the manner prescribed in the patent in suit.

PETITIONER'S MISREPRESENTATIONS OF SCIENTIFIC FACTS RELEVANT TO SAID CLAIM 1.

Petitioner's Exhibit 13 (Trans. p. 180) is a "Graph Showing Development of Heat Units in Incubation", made by his expert witness Joseph I. Taggart, whose initials appear adjoining the date "12/22/28" thereon. It presents a fraction of truth, so as to be grossly misleading to the numerous Courts to which it has been presented since that date, with glib statements that the "heat units"

referred to in said "Graph" are calories, of which "(.252 calories equal one B.T.U.)". See the first paragraph at the bottom of said "Graph".

The *blue* area on said "Graph" purports to represent the heat required, during the first ten days of incubation, to raise eggs to, and keep them at, the "incubating temperature" referred to in the legends thereon, which temperature is represented by the single horizontal line extending at the *top* of the *blue* area and *bottom* of the *red* area. The *red* area represents the "excess heat" given off by such eggs during the last eleven days of incubation.

The red area is more than three times greater than the blue, *misrepresenting* that the eggs *generate* more than three times as much heat as they absorb during the twenty-one days of incubation.

Under cross-examination Taggart admitted (Trans. p. 69, f. 207; p. 70, f. 208) that said "incubating temperature" must be neither more nor less than ninety-nine degrees Fahrenheit. That the rise in temperature from the *tenth* to the *eighteenth* day is but one degree Fahrenheit and that the *highest* temperature of the eggs is not attained until the *twenty-first* day.

Consequently, the vertical distance of 1.6 inches from the bottom of the "Red curve" to where the "Black Curve" crosses the vertical "18" day line on said "Graph" represents but *one degree F.*, and the *bottom* line of said "Graph" represents an *initial egg temperature* of 98.75° F.!

On the contrary, it is a matter of common knowledge that whether the eggs are gathered from a barn floor, freight station platform, or cold storage refrigerator; their *initial* temperature is more than 50° F. *lower* than 98.75° F.

Therefore, to present the *whole* truth the *blue* area of said "Graph" should be extended, vertically downward, more than *eighty inches* (50 times 1.6 inches) below

the bottom line of said "Graph", to indicate the *actual* initial temperature of the eggs submitted to incubation.

When that is done the truth appears that the *quantity* of heat *generated* by the eggs and fully manifested by the *red* area of said "Graph" is but a *minute and negligible fraction* of the whole quantity of heat required to hatch eggs by the method of said claim 1, and the Petitioner's propaganda to the contrary urged for the past *19* years, first, upon the Commissioner of Patents, to obtain said Letters Patent, and, later, upon prospective customers, and, finally, upon numerous Courts, including this Court, was and is false and fraudulent.

COMPARATIVE INEFFICIENCY OF PETITIONER'S METHOD.

In view of Petitioner's propaganda presented of record in this Hall case to the effect that the method of hatching of claim I in suit is highly efficient; attention is called to the fact that in the trial of Samuel B. Smith v. F. J. LeMieux, La Plant Hatcheries, at Milwaukee, Wisconsin, on May 9, 1935, witnesses subpoenæd by Petitioner disclosed that use of said "method of hatching" during the hatching season of the year 1935, resulted in hatching not more than 35% of all of the eggs set. That testimony related to the use of said method in Robbins incubators of a form of which Petitioner complains in this case, but, it is a matter of common knowledge to those in the poultry industry that the same percentage of hatching resulted from the practice of Petitioner's method of hatching in incubators manufactured and sold by or for him marked with the number and date of the patent in suit.

In contrast: It should be noted that since the Fall of the year 1930 the only method of hatching used by Respondents was effected in a hatching chamber containing only eggs which have reached the eighteenth day of their

incubation (Trans. p. 63, f. 189), which hatching chamber is separate and apart from any chamber containing eggs in any earlier stage of incubation. (Trans. p. 95, ff. 284-285). The evidence (Trans. p. 96, f. 286) that the use of that separate hatching method by Respondents has enabled them to hatch between 85% and 90% of the eggs set, was undisputed.

THIS COURT DECEIVED.

In view of the use of that separate hatching method not only by these Respondents but by many other defendants named in suits by your Petitioner; this Court was deceived to the erroneous belief, (set forth in Trans. p. 148, f. 444) "the eggs passed into the more advanced stages of incubation, *reaching their highest temperature about the seventeenth day*" (italics ours). That statement is contradicted by the admissions of Petitioner's witness Taggart (Trans. p. 70, f. 208) in his testimony re Plaintiff's Exhibit 13 (Trans. p. 180), and clearly and specifically to the effect that even at the end of the *eighteenth* day the eggs have only reached a temperature of 100° F., whereas, the *highest* temperature, of 105° F., is not reached until the twenty-first day, as shown by said Exhibit 13.

FRANCIS W. ORVIS, EDITOR OF POULTRY DIGEST.

In line 1 et seq. on page 29 of the Brief for Petitioner it is stated:

> "Important practical witnesses who must have been informed on the subject and who were available, such as Orvis, the editor of a poultry magazine to whom Hastings is alleged to have disclosed his invention, Miller, the manager of the Davis farm, and others, were not called nor was their absence accounted for."

Therefore, we note that we informed the Court below that we made a diligent search for both Orvis and Miller with the result that we were credibly informed that both were dead.

It was not until Petitioner's Counsel Albert L. Ely, Edmond M. Bartholow, and Geo. C. McConnaughey filed their Brief on appeal in the United States Circuit Court of Appeals for the Second Circuit that they disclosed in line 3 et seq. on page 16 thereof "As a matter of fact Orvis is alive today and lives in Hackensack, N. J."

Why did not Petitioner's Counsel call Orvis as a witness to contradict the testimony of Respondents' three witnesses Milo M. Hastings, Walter B. Davis, and Mrs. Davis? The answer is that if called Orvis would have corroborated the testimony of said witnesses, as is clearly indicated by the letter of "Francis W. Orvis, Editor, Poultry Digest" dated *May 20, 1911*, reproduced on page 254 of the Cooley record including your Respondents' Exhibit F, wherein Orvis described the incubator which he had inspected at the farm of Walter B. Davis, thus:

> "A small room was so arranged that with the various devices of Mr. Hastings', heat, moisture and ventilation were under perfect control and the eggs and chicks were as easily accessible as in the opening of a bureau drawer. The little fellows were coming out and new eggs added daily, making a continuous hatching proposition under absolute control of the operator.
>
> "The percentage of eggs hatched the day the writer visited the plant was somewhat better than obtained from the same grade of eggs hatched in ordinary incubators running at the same time and under the same conditions."

What Orvis thus described was certainly "staged incubation".

PETITIONER HAS CERTAINLY KNOWN FOR AT LEAST 13 YEARS THAT HE WAS NOT THE FIRST INVENTOR OF THE SUBJECT MATTER OF SAID CLAIM 1.

Counsel for Petitioner stated to Judge Hincks at the trial of the Hall case, that the Petitioner had made an investigation and ascertained the facts concerning the building and operation of an incubator for Walter B. Davis by Milo M. Hastings in the years 1910 and 1911; when that matter was first mentioned in defense of a charge of infringement by Petitioner. Indeed any statement that Petitioner had *not* made such investigation would have been incredible. Consequently, Petitioner must have known, at least as early as the trial of *Buckeye Incubator Co. v. Wolf*, 291 F. 253, (D. C. Ohio, 1923), that he was not the first inventor of the subject matter of claim 1 of the Smith patent 1,262,860. Nevertheless, Petitioner has continued to use said Letters Patent as an instrument of intimidation and oppression of the public, in disregard of relevant laws, rules, and the decisions of this Court. For example, in the U. S. District Court for the District of New Jersey, on *May 4, 1935*, Petitioner filed three Bills in *Equity*, respectively No. 5113 against Ernest Grove, No. 5114 against Mary A. Griscom, and No. 5118 against Glenn T. Sponenbergh, d. b. a. Glenn T. Sponenbergh Hatcheries, charging infringement of and asking for *injunctions* under said Smith patent 1,262,860 which had expired on *April 16, 1935*, and in disregard of the fact that such procedure had been condemned in the decision of this Court in *Root v. Railway Co.*, 105 U. S. 189.

In the light of even the few facts of record, briefly reviewed supra, our imagination is not elastic enough to attribute to Petitioner Smith, the "clean hands" said to

be necessary for *any* Petitioner seeking the favor of any Court in Equity.

Respectfully submitted,

HALL BROTHERS,
By
ARTHUR E. PAIGE,
FRANK E. PAIGE.

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IN THE

SUPREME COURT OF THE UNITED STATES

October Term, 1936.

No. 35.

SAMUEL B. SMITH,
Petitioner,

v.

A. B. HALL and L. C. HALL, d. b. a. HALL BROTHERS,
Respondents.

BRIEF FOR RESPONDENTS.

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IN THE

Supreme Court of the United States

October Term, 1936. No. 35.

SAMUEL B. SMITH,
Petitioner,

v.

A. B. HALL and L. C. HALL, d. b. a HALL BROTHERS,
Respondents.

BRIEF FOR RESPONDENTS.

THE OPINIONS BELOW.

The opinion of the Circuit Court of Appeals for the Second Circuit is reported in 83 F. (2d) 217 and in the Hall Record at p. 237. It held invalid claim 1 of the patent in suit, which was the only claim involved in the Hall suit. The opinion of the District Court has not been officially reported. It is found at p. 211 of the Hall Record and held the beforementioned claim valid and infringed.

THE PARTIES.

Petitioner trades as The Smith Incubator Company at Cleveland, Ohio, where he has a "Legal Department" under the supervision of his witness, Joseph I. Taggart, occupied in continued prosecution of several hundred separate suits

involving the same subject matter as the suit against Hall Brothers.

The respondents were, at the time of the institution of this suit, individuals doing business as Hall Brothers. They were operating a farm at Wallingford, Connecticut, where they conducted a large egg incubating plant.

STATEMENT OF THE CASE.

The issues raised in the Court below were limited, at the trial, to the questions of validity and infringement of the claim 1 of Letters Patent of the United States No. 1,262,860 granted April 16, 1918, to the Petitioner, as assignor to The Buckeye Incubator Company, a corporation of Ohio, for Incubator, and alleged to have been re-assigned to the Petitioner subject to a license to, and an agreement with, the original patentee corporation.

The charge of infringement of that claim is based upon the use by Respondents of various different incubator structures manufactured under Letters Patent of the United States Reissue No. 18,984 dated October 31, 1933, granted to John L. Robbins, of Edgewater, Colorado, for Incubator, (upon surrender of original Letters Patent No. 1,728,980 dated September 24, 1929), and purchased by Respondents from the manufacturer, The Robbins Incubator Company, of which the patentee Robbins is the president and proprietor. Said manufacturer has not appeared in this litigation.

The "Brief for Petitioner" raises in this Court both of the questions of validity and infringement of Petitioner's claim 1, and both questions will be considered in this Brief although Respondents' principal contention is that said claim is invalid and void in view of evidence Respondents presented in the District Court below which had not been presented in either of the cases Smith v. Snow or Waxham v. Smith (294 U. S. 1 and 20), or in any other case. That evidence relates to what was done by Milo M. Hastings in

constructing an incubator at Kings Highway and Twenty-third Street, Brooklyn, New York, for Walter B. Davis, in the latter part of the year 1910, and the method of hatching employed in that incubator by Hastings as soon as that incubaor was completed, and in the Spring of 1911 and thereafter, by Hastings and others in the employ of said Davis. The decision of the Court of Appeals for the Second Circuit in the present case held not only Petitioner's claim 1 but also his claims 2, 3, and 5 of the patent in suit invalid and void in view of that prior invention, use, and disclosure by said Hastings, as proven by these Respondents.

Many statements under the heading "Brief History of Hastings" on page 7 of "Brief for Petitioner" dated September 25, 1936, and under the heading "The Hastings Defense in General" on page 16 of said Brief are extensively erroneous as to matters of fact of record, noted infra.

ARGUMENT.

Point I: The Evidence Adduced by these Respondents, Which Convinced the Second Circuit Court of Appeals That Petitioner Was Not the First Inventor or Discoverer of the Subject Matter of His Claim 1, Was never Presented in Any Court Prior to the Present Case.

As stated on page 2 of "Brief for Petitioner", what is termed the "Hastings defense" was neither presented nor considered in either Smith v. Snow or Waxham v. Smith (294 U. S. 1 and 20). It was pleaded in the Snow case but no proofs were presented.

As stated on page 4 et seq. of "Brief for Petitioner", said "Hastings defense" was pleaded in three cases before that of Snow and since the decisions of this Court in the Snow and Waxham cases said defense has been pleaded

in but four U. S. cases, to wit, Smith v. Street, Smith v. Sims, and in the instant James and Hall cases.

Said "Hastings defense" was first pleaded in Buckeye et al. v. Wolf (291 Fed. 253, 258). Judge Westenhaver considered the proofs concerning it inadequate and rendered a judgment against Wolf. That decision of Judge Westenhaver was affirmed by the Court of Appeals for the Sixth Circuit without specific discussion of the Hastings defense (296 Fed. 680).

Said Hastings defense was next presented in Buckeye et al. v. Cooley. Cooley had purchased a second-hand Smith incubator and made a duplicate of every feature of its construction and arrangement. Therefore, his attorneys who, by the way, were not experienced in patent practice, sought to show anticipation of Smith's claims for his incubator **structure**. They had both Hastings and Davis supervise the making of a drawing illustrating said incubator which Hastings had built and operated for Davis. That drawing was offered in evidence as Cooley's Exhibit D-D which is reproduced on the last page of this Brief. Not only Hastings and Davis, but also Edgar Chambless, testified in the Cooley case that said drawing showed the actual construction and arrangement of that incubator which was built in a corner of the cellar of the house on the poultry farm at Kings Highway and Twenty-third Street, Brooklyn, described in Hall's Exhibit G, which was leased by Davis and which house was occupied by him as a roadhouse restaurant, making a specialty of chicken dinners.

As testified by Hastings, Davis, and Chambless, that incubator was six feet long, six feet wide, and more than six feet high, extending from the floor to the ceiling of said cellar. Chambless testified in the Cooley case that he not only saw said incubator during the course of its erection, but observed the operation of incubation and hatching therein repeatedly thereafter, and his testimony is clearly to the effect that staged incubation was practiced

in that incubator by Hastings in the Spring of 1911. See a copy of Chambless' testimony in the Cooley case which is reproduced on pp. 19-20 of this Brief.

It is obvious that said drawing of Hastings' incubator does not show any combination of any of Petitioner's claims for **the structure** of his incubator, and Judge Bodine rendered a decision against Cooley, of which there was no printed report. That decision was affirmed by the Circuit Court of Appeals for the Third Circuit, as reported in 17 F. (2d) at page 453.

The third suit in which said Hastings defense was pleaded was Buckeye et al. v. Stone, and in that case also the evidence concerning it was inadequate. That case was referred to a Master, Mr. Maguire, who recommended judgment against Stone. There was no review of that Master's report by the District Court or the Court of Appeals.

Since the decisions of this Court in the Snow and Waxham cases, said Hastings defense was pleaded in the cases of Smith v. Street and Smith v. Sims and in the Exchequer Court of Canada in the case identified as "1936 Ex. C. R. 105" wherein the Attorney General of Canada sought to impeach the Canadian Patent 217,777 issued to Samuel B. Smith on April 18, 1922, equivalent to Petitioner's patent here in suit. In each of those last three mentioned cases, the Smith patent was held valid, although, as stated at the end of the opinion in said Canadian case, "not unhesitatingly".

However, as above noted, the evidence presented by Respondents in this case was never before presented in any Court. It includes the testimony of Milo M. Hastings, who designed, constructed, and operated the incubator on the poultry farm of Walter B. Davis at Kings Highway and Twenty-third Street, Brooklyn, New York; the testimony of Walter B. Davis, at whose expense said incubator was constructed and under whose supervision it was constructed and operated. Also, the testimony of Mrs. Davis who was at that time not only the Secretary and Book-

keeper for Mr. Davis, who ordered and paid for the materials for the incubator and the eggs to be incubated in it, and paid Mr. Hastings, but also repeatedly inspected the incubator and observed both eggs and hatched chicks in staged incubation in the superimposed trays thereof during its operation.

That incubator remained in the possession of said Walter B. Davis on his farm, after Hastings left his employ, and until the end of the year 1913, when Davis was compelled to vacate said farm, which he had only leased, and as it was too large to be bodily removed from the cellar, it had to be torn to pieces to permit its removal so that he could leave the premises in the condition in which they were leased to him.

Point II: Every Feature and the Complete Combination, of Petitioner's Claim 1, Was Not Only Invented and Discovered by Milo M. Hastings But Disclosed to Others and Made, Used, and Sold to Walter B. Davis More Than Three Years Prior to the "Spring of 1914", the Earliest Date Alleged by Petitioner for His First Conception Thereof.

CLAIM 1, OF THE PATENT.

> "1. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a current of heated air, said current being created by means other than variations of temperature and of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified."

COMPARISON OF PETITIONER'S CLAIM I WITH THE NEW EVIDENCE OF RESPONDENTS.

Elements of Structure Required by said Claim:

(a) means for supporting eggs "at different levels" in

(b) "a closed chamber having"

(c) "restricted openings"

(d) "means other than variations of temperature" for "applying a current of heated air" throughout the chamber

(e) "means for maintaining the air "at substantially the same temperature".

Each of said elements of structure required by the claim in suit was present in the incubator which Milo M. Hastings built and operated for Walter B. Davis at least as early as the Spring of the year 1911. The testimony adduced by Respondents with reference to said respective elements of structure is as follows:

(a) Testimony of Hastings (Hall Rec. p. 52, f. 78) of Mr. Davis (Hall Rec. p. 59, f. 87); of Mrs. Davis (Hall Rec. p. 62, f. 93).

(b) Testimony of Hastings (Hall Rec. p. 52, f. 78); of Mr. Davis (Hall Rec. p. 58, f. 87); of Mrs. Davis (Hall Rec. p. 62, f. 93).

(c) Testimony of Hastings (Hall Rec. p. 53, f. 80); of Mr. Davis (Hall Rec. p. 58, f. 87); of Mrs. Davis (Hall Rec. p. 62, f. 93).

(d) Testimony of Hastings (Hall Rec. p. 52, f. 78); of Mr. Davis (Hall Rec. p. 58, f. 87).

(e) Testimony of Hastings (Hall Rec. p. 53, f. 79); of Mr. Davis (Hall Rec. p. 58, f. 87-88).

Elements of Operation Required by Said Claim:

(f) "hatching a plurality of eggs"

(g) "escape of foul air"

(h) "applying a current of heated air"

(i) "maintain the air throughout the chamber at substantially the same temperature"

(j) maintaining in the same chamber **during the hatching**, eggs of "more advanced stage of incubation" with others "in a less advanced stage".

(k) carrying "units of heat" "from the eggs in the more advanced stage of incubation to those in a less advanced stage", **during the hatching**.

Each of said elements of operation required by the claim in suit was included in the method of hatching in which the Hastings incubator aforesaid was used in the Spring of 1911. The testimony adduced by Respondents with reference to said respective elements of operation is as follows:

(f) Testimony of Hastings (Hall Rec. p. 52, f. 78-79); of Mr. Davis (Hall Rec. p. 59, f. 87); of Mrs. Davis (Hall Rec. p. 62, f. 92-93).

(g) Testimony of Hastings (Hall Rec. p. 53, f. 80); of Mr. Davis (Hall Rec. p. 58, f. 87); of Mrs. Davis (Hall Rec. p. 62, f. 93).

(h) Testimony of Hastings (Hall Rec. p. 52, f. 78); of Mr. Davis (Hall Rec. p. 58, f. 87).

(i) Testimony of Hastings (Hall Rec. p. 53, f. 79); of Mr. Davis (Hall Rec. p. 58, f. 87-88).

(j) Testimony of Hastings (Hall Rec. p. 52, f. 78; p. 53, f. 80); of Mr. Davis (Hall Rec. p. 59, f. 87); of Mrs. Davis (Hall Rec. p. 62, f. 93).

(k) Testimony of Hastings (Hall Rec. p. 53, f. 79-80); of Mr. Davis (Hall Rec. p. 58, f. 87-89); of Mrs. Davis (Hall Rec. p. 62, f. 93).

We have given the Court a reference to the testimony rather than a recital thereof, because we have thought that on so vital a point the Court would prefer to see the actual testimony of the witnesses rather than counsels' interpretation thereof. The parts of the record thus referred to are comparatively brief. This testimony shows that every element of claim 1 of the patent in suit was conceived, reduced to practice and exhibited to others by Mr. Hastings. As will be subsequently shown, all of this was done at least three years before the earliest date claimed for Smith's conception.

Point III: Every Feature, and the Complete Combination, of Petitioner's Claim 1, Was Not Only Disclosed to His Attorneys Church & Church, by Milo M. Hastings, But Clearly Described in the Patent Office Record of Hastings' Application, Which is Hall's Exhibit F, Prior to the "Spring of 1914", the Earliest Date Alleged by Petitioner For His First Conception Thereof.

Defendants' Exhibit F (Hall Rec. pp. 248-283) is a photographic reproduction of a certified copy of the United States Patent Office records re application Serial No. 624,885 filed May 3, 1911, by Milo M. Hastings for Hatchery for the Eggs of Domestic Fowl. Said application was filed by Milo M. Hastings during the time he was employed by Walter B. Davis in building and operating said incubator at Davis' poultry farm in Brooklyn, New York, beginning in December, 1910, and continuing in 1911. (See Hall Rec. p. 52, f. 78-79, and p. 55, f. 82).

Consequently, that Patent Office record, Defendants' Exhibit F, is documentary evidence contemporaneous with

the events alleged in the testimony of Respondents' three witnesses, Messrs. Hastings and Davis and Mrs. Davis. It discloses every feature of said Smith claim 1, as follows:

> (Hall Rec. p. 250) "My invention is that of a hatchery in which I secure better ventilation and a more uniform temperature throughout the hatching chamber by substituting a forced draft for gravity drafts."
>
> (Hall Rec. p. 251) "Ventilation I secure through cracks around the door of the hatching chamber or other small openings in any part of the air circuit. The air being constantly in motion, requires less rejuvenation than dead air."
>
> (Hall Rec. p. 271) "The problem has been to enable the incubating operations to be carried on continuously, if so desired, with eggs at all stages of development, and with all of a vast number of eggs subjected to the same temperature and atmospheric conditions best adapted for the development of the embryo."
>
> (Hall Rec. p. 272) "In practice it is found that with vast numbers of eggs assembled in a single compartment and with eggs at all stages of incubation but very little extraneous heat need be supplied; because the eggs in the later stages of development supply the necessary heat for the eggs in the earlier stages of development. In practice, however, a source of heat is always maintained in order to permit of proper regulation."
>
> (Hall Rec. p. 273) "The simple way in which applicant overcame the difficulty was through the provision of a mechanically operated air forcing means which would force a rapid circulation of air through the whole collection of eggs in the chamber and past the heater. The mechanical air forcing means is an essential factor, if heat is to be conserved and the

conditions maintained uniform; for a circulation, which is due to differences in temperature in different portions of the circulatory system, as, for example, where the air is circulated by the effect of the heater in causing the heated air to rise and pass into or through the incubating chamber, will not answer for large collections of eggs."

(Hall Rec. p. 275.) "In the Hastings hatchery, a current of air is blown past each and every egg at the rate of thirty feet per minute and this rapidly moving air quickly bringing the temperature of the egg to approximately that of the air. This method of heating keeps the temperature of the eggs in the advanced state of incubation down within a few degrees of that of the air, the exact difference being regulated at will by adjusting the speed of the fan. When properly adjusted the same blast of air used to heat fresh eggs does equally well for eggs in the advanced stages just as the same temperature of the body of the hen incubates the eggs at all stages of development, without recourse on the hen's part to the 'hatching fever', erroneously supposed to explain the higher temperature of eggs at a more advanced stage of development. Owing to this fact eggs at all stages may be handled simultaneously with uniformly good results."

"The operator of a Mechanical Draft plant may switch as much 'fresh' or outdoor air into this inner circulation as he is willing to heat. The inventor's practice is to use but a small portion of outdoor air except in cases of excessive humidity, when a large exchange of air is untilized as a simplest means of increasing evaporation."

(Hall Rec. p. 276) "The introduction of moisture from the mist spray nozzles in the fan boxes to increase humidity, or running in outside air to decrease

it as indicated by egg weights or air cell shrinkage is sufficient for ordinary hatching practice."

It appears from the first two paragraphs above quoted from that Patent Office record, which were in the original application as filed by Hastings, that he considered the most essential feature of his invention to be the circulation in an incubator chamber of a current of heated air by means other than variations in temperature. His attorneys Church & Church evidently agreed with him, for they made no effort to claim for him that feature in association with eggs in staged incubation although not only that combination but its various advantages were clearly disclosed to them, as appears from the other quotations from that record, supra.

Nevertheless, the Official record relating to said application is unquestionable evidence that the invention described in claim 1 here in suit was not only clearly disclosed therein but "known to others" than Smith long before the latter's alleged date of conception thereof in the Spring of 1914; those others including Milo M. Hastings, the five witnesses to his application, to wit, Edgar Chambless and Jeanette Cohen (Hall Rec. p. 251), J. P. Gannon (Hall Rec. p. 252), Walter B. Davis, and Isabel E. Carkhuff (Hall Rec. p. 283, now Mrs. Davis); Hastings' attorneys, Church & Church, and their employes who typed and compared the brief of Church & Church presented to the Board of Examiners-in-Chief; the Primary Examiner, G. R. Ide, and his assistants who prepared and filed the "Examiner's Statement" (Hall Rec. p. 268), and the three Examiners-in-Chief (Hall Rec. p. 280).

HASTINGS' CLAIM APPEALED.

"A hatchery for eggs embodying an incubating chamber adapted for the reception of superposed trays for eggs to be incubated, whereby said eggs

will be arranged in layers one above the other, means for effecting a distribution of air uniformly to the eggs in the chamber, means for heating the air, and mechanically operated means for forcing a uniform circulation of air through all parts of the chamber and past the heater, whereby convexion currents will be eliminated, temperature and gaseous stratification of the air in the chamber overcome, and the eggs subjected to the influence of air of the same temperature and composition."

As noted at the end of the decision of said three Examiners-in-Chief (Hall Rec. p. 280), one of them agreed with the appellant, Hastings, that said claim was patentable to him. It is obvious that it is broader than Petitioner's claim 1, and, consequently, Petitioner could not have used his invention without infringement of that claim if it had been granted to Hastings.

In accordance with the reasoning of this Court in the **Snow** case (294 U. S. 1), Plaintiff's Exhibit 2, Hall Rec. p. 98), Hastings' application should have been allowed and Letters Patent granted to him instead of to the Petitioner who adopted Hastings' invention after it was in public commercial use and articles concerning it widely published (Hall Rec. pp. 63-64, f. 94-95) in periodicals of the poultry industry of which there are numerous examples (pp. 296-300, 302-303) in the Transcript of Record of the **Cooley** case, of which Defendants' Exhibit F is a part. Of course, Hastings forfeited his right to obtain Letters Patent for the invention in question by abandoning his application, but, he abandoned it to the public generally and not to the Petitioner Samuel B. Smith exclusively.

Hastings prepared said application himself, when but twenty-seven years old, and without any previous experience in such matters. Consequently, the application papers which were filed in the Patent Office on April 25, 1911, were objected to as informal, and his application was not

accepted for filing until he had corrected those informalities on May 3, 1911. It may be observed that the Official letters to Hastings during the prosecution of said application were addressed to him at the address of the Davis Poultry Farm where he was operating the incubator in accordance with the new evidence aforesaid.

Point IV. Milo M. Hastings Had Long Experience in the Art of Incubation, and With Incubators of Various Types, Before He Invented the Incubator He Made for Davis, and the Method of Incubation of Petitioner's Claim 1 Effected Therein.

Following the heading "Point II" on page 16 of "Brief for Petitioner", is a labored attempt to discredit Milo M. Hastings, by assertions to the effect that he was ignorant of the art of incubation and unable to recognize the difference between **refrigeration of vegetables** and **incubation of eggs**. Such assertions are ridiculous in view of the evidence of record, for instance, in the Cooley case, with which the authors of said Brief claim to be familiar.

The uncontradicted testimony in the Transcript of Record in the Cooley case, (see Hall's Exhibit F, p. 75, et seq.) is that when Milo M. Hastings was but twelve years of age, in 1897, he constructed an incubator in which the source of heat was a lamp. That during the next few years he operated commercial incubators of the lamp type, such as were then in common use. That in the Summer of 1902 he was employed on a poultry farm at Belleview, Illinois, and there operated incubators. That in the Fall of 1902 he was a student in the Kansas State Agricultural College at Manhattan, Kansas, where he was "given full charge of the chicken work at the experiment station", operating under the direction of the dairy department of said College. That during the college year, 1902 and 1903, he was "the poultry man in charge of the poultry at the College Station on the college campus."

That in the following years, to 1906 inclusive, he was teaching school. That while thus engaged as a student and instructor in poultry work at said College, he "conducted the first experimental station egg laying contest in the United States, and had general charge of poultry work at the college, which included the incubating during the season" which was effected in incubators of "several makes" including the "Cyphers" which "was the prevailing lamp machine at that day". That after graduation from college in 1906, Hastings came East and was engaged in other work until January 1, 1908, at which time he received an Official appointment in the United States Department of Agriculture, Bureau of Animal Industry, and was assigned to conduct "a **general survey of the poultry industry and with special application to the marketing of eggs.**"

That he traveled in thirty-six of the United States, "visiting most of the experiment stations, the marketing centers, the produce houses, the packing houses, the large poultry farms for the purpose of preparing a bulletin thereon." That he was "stationed in Chicago for a month or more in the Winter of 1908, specially studying the cold storage of eggs." That during that time he invented an instrument called "a cold storage evaporimeter" which was patented by the Department of Agriculture. That patent is No. 911,875 granted February 9, 1909, to Milo M. Hastings for Apparatus for Measuring the Humidity in or Determining the Evaporating Power of the Air", and a copy of it is Hall's Exhibit I appearing in Hall Rec. p. 210-A,

That in the course of that investigation, Hastings' attention was called to Letters Patent of the United States No. 754,749 granted to Madison Cooper for Cold Storage Apparatus. That "As described in the patent, the purpose of this circulation of cooled air by a fan was to maintain an equal and well distributed uniform temperature in the chamber for the *purpose of storing eggs*". That later in the year 1908 he visited Madison Cooper at his home in Watertown, New York, and "consulted with him about the

use of the same device for the *purpose of incubating* **eggs.**" (Italics ours.) [See note.]

There is no mention of "vegetables" in said Cooper patent 754,749 which is reproduced in pages 365 to 371 inclusive of the Cooley Record, (Hall's Exhibit F). Therefore, the disparaging statement in line 21 et seq. on page 7 of said "Brief for Petitioner", to the effect that the incubator which Milo M. Hastings testified he built in 1910, and operated in 1911 at the poultry farm of Walter B. Davis, in Brooklyn, New York, was copied from "Apparatus developed by one Madison Cooper for the preservation and **cold storage of vegetables**" is erroneous. Moreover, the numerous disparaging statements in said "Brief for Petitioner" as to Hastings' selfish interest in the premises, are contradicted by the evidence certainly known to Petitioner's Counsel.

In fact, the attitude and conduct of Milo M. Hastings, in his prolonged efforts to benefit the poultry industry, appearing from abundant Official records, are in sharp contrast with the attitude and conduct of Petitioner Smith who, having received Letters Patent for the claim here in suit, for an invention which was not his, but Hastings', proceeded, and is continuing, to use it as an instrument of terrorism in the continued prosecution of several hundred suits against defendants engaged in that industry, since the expiration of Petitioner's patent here in suit, although fully aware that his complaints in all of said suits are devoid of equity.

Note: After that consultation between Milo M. Hastings and Madison Cooper, the latter designed for Rolla Lawry, of Missouri, the incubator which was built by Lawry and successfully operated under his direction and to which Judge Bodine referred in his decision in the Hillpot case (22 F. (2nd) 857) "Rolla Lawry probably completely anticipated Smith, but his anticipation need not now be considered".

Point V: The Drawing, Part of Milo M. Hastings' Application, Serial No. 264,885, Reproduced in Hall's Exhibit F, Was Merely Diagrammatic of the Incubator Which He Built for Walter B. Davis at Brooklyn, and Did Not Purport to be an Exact or Complete Drawing Thereof.

That drawing shows a box which is about three times as long as it is high, as shown by the illustrations (Hall Rec. p. 283) and on page 24 of "Brief for Petitioner" the door and vestibule leading to the egg chambers being omitted.

On page 24 of "Brief for Petitioner" it is stated:

> "This drawing made by Hastings and incorporated by him in his patent application was made at about the time when he completed the Davis or Brooklyn incubator. Therefore, it seems only reasonable to assume that it represents what Hastings then had in mind as the best embodiment of his ideas about incubator construction, *and the construction he employed in building the Hastings incubator.*" (Italics ours.)

That is obviously untrue, as is evident from even a casual comparison of that drawing as reproduced on Hall Rec. p. 283, with said Cooley's Exhibit D-D drawing, reproduced at the end of this Brief, which witness Chambless testified, pages 19-20 infra, accurately illustrates the incubator which Hastings built for Davis at Brooklyn, and with which Chambless was entirely familiar as he testified. Hastings' application drawing is a mere diagram illustrating what he understood to be the novel features of his invention as described in the claim of that application which he formulated without any knowledge or experience in such matters.

Counsel for Petitioner must have forgotten temporarily the admonition of this Court that "The law requires

not conjectures but certainty." (Coffin v. Ogden, 18 Wall. 120) cited in their "Brief for Petitioner", p. 14. Their conjectures above quoted are expressly denied by the certainty of the testimony of Chambless with reference to the Cooley Exhibit D-D. (Pages 19-20, infra.)

On page 25 of "Brief for Petitioner" it is conjectured that the incubator which Hastings built for Davis in 1910, as aforesaid, and began to operate early in 1911, included "fabric panels" such as indicated at the top and bottom of the egg chamber on page 24, and Counsel for Petitioner elaborate on that theory an argument to the conclusion, at the middle of page 26 of said Brief, that "this Brooklyn hatchery lacked the forced current circulation of air through a large mass of eggs with sufficient velocity to maintain and equalize the temperature throughout."

All such conjectures, theories and conclusions are negatived by the uncontradicted evidence of record, for instance, in the Cooley case, Milo M. Hastings testified, "Transcript of Record" (Hall's Exhibit F) p. 136 et seq., as follows:

> "XQ212. And you had never used such a perforated partition or fabric or anything of the kind with this Davis Hatchery? A. I cannot say that I might not have used fabrics in that hatchery, but I did not use them throughout the hatching season.
>
> XQ213. What is your best recollection as to whether you did use fabric or did not? A. My recollection is that in trying out the circulation of air through that chamber before incubating eggs in it, that I introduced fabrics and found they checked the flow of air too much, hence discarded them."

That testimony was confirmed by the testimony of witness Edgar Chambless, above mentioned, with reference to Cooley's Exhibit D-D, to wit, the drawing of said Brooklyn incubator, which was made under the supervision

of both Hastings and Davis as witnesses in that case, and does **not** include any such fabric panels, and was declared by Chambless to be an accurate illustration of that incubator. (See pages 19-20, infra.)

As appears on page 251 of Hall's Record, Hastings' application for patent for Improvement in Hatchery for the Eggs of Domestic Fowl" was witnessed by "Edgar Chambless". He was called as a witness in said Cooley case and as appears on page 169 of the Transcript of Record in that case (Hall's Exhibit F), testified concerning the hatchery built by Hastings for Davis, as follows:

"Q20. Did you see the hatchery while it was being built? A. Yes, sir.

Q21. Did you see it after it was completed? A. Yes, a number of times.

Q22. Did you see it in operation? A. Yes, sir.

Q23. I hand you Defendant's Exhibit D, and ask you to state whether or not you recognize what is shown therein? A. Yes, I recognize it very distinctly.

Q24. As what? A. As being the hatchery built by Mr. Hastings at Mr. Davis' place, and located in his basement or cellar.

Q25. And does this drawing that you have just looked at correctly illustrate the construction and arrangement of the various parts that entered into this Davis hatchery? A. I would say it is quite accurate.

Q26. Did you see any hatches coming off from this Davis hatchery while it was being operated by Mr. Davis? A. Oh, yes, a number of times.

Q27. Do you know of your own knowledge how long Mr. Hastings operated that hatchery? A. Why, no, I don't remember, a month or so at least.

Q28. Do you recall about the size of that hatchery? A. What?

Q29. About the size of the hatchery? A. Oh, yes,

I was inside of it, it was—I could walk into it without stooping. It must have been around seven feet, I suppose, high, and about six feet square, six feet in breadth and width, and about seven feet high, maybe a little taller. I don't remember the exact height.

Q30. Did you visit that plant often enough to determine for yourself whether the character of the hatches was good, bad or indifferent? A. Why, I went out on week ends at least a half a dozen Saturdays, and stayed over from Saturday to Sunday, and there were hatchings coming out almost every time I went out. I went out partly because I felt interested in this demonstration."

Certainly, the answer of Chambless to Q30 above quoted, is evidence that staged incubation was practiced in the Hastings' incubator made for Mr. Davis at Brooklyn, in 1910, and operated in 1911, and confirmed the testimony of Hastings and Davis in the Cooley case and also the above cited testimony of Hastings, Davis, and Mrs. Davis in the Hall case.

Moreover, on page 253 of the Transcript of Record in the Cooley case (Hall's Exhibit F), there is an illustration entitled "A. Exterior. B. Interior." That is a reproduction of respective snapshots in overlapped relation. The exterior photograph "A" shows at the right the exterior door of Hastings' incubator at the Davis Poultry Farm, which door is indicated at the left-hand side of the upper left-hand illustration in said Cooley drawing Exhibit D-D which is reproduced at the end of this Brief. The rectangular dark spot above the letter "A" on that photograph is the outlet for the fumes from the gas heater, which outlet is indicated at I in the illustration A-2 on said Cooley Exhibit D-D, which is described in the testimony of Milo M. Hastings on page 81 of the Transcript of Record in the Cooley case thus:

"There is an exit for the fumes from the gas flames, that we will mark I."

The photograph "B" aforesaid shows the interior of that incubator at the Davis Poultry Farm with adjoining egg trays pulled out into the corridor and showing in the nearest tray all white eggs and in the adjoining tray marked "B" black chicks emerging from white egg shells. Certainly, that is unmistakable evidence of staged incubation in that incubator.

Edgar Chambless testified that he made said photographs in the Spring of 1911. His testimony appears on page 171 of the Transcript of Record in the Cooley case (Hall's Exhibit F), as follows:

"Q35. I draw your attention to the illustrations found on page 12 of Defendant's Exhibit C, and ask you to state whether you can recognize the same? A. Yes, this is an exact—this is a photograph of that hatchery, I made it.

Q36. In the Spring of 1911? A. Yes."

We submit that such testimony and contemporaneous records are overwhelming evidence of the employment of staged incubation in the incubator which Hastings erected for Davis at Brooklyn in 1910 and operated in 1911 and that such evidence is fully known to Counsel for Petitioner who have presented voluminous argument to the contrary in the present "Brief for Petitioner".

Point VI: The Percentage of Eggs Hatched in Hastings' Brooklyn Incubator Was Not Only Better Than Obtained From the Same Grade of Eggs Hatched in Ordinary Incubators at the Same Time and Under the Same Conditions But Was "as High as Eighty-six Per Cent. Hatches of Fertile Eggs From Yarded Stock".

On page 35 of "Brief for Petitioner" it is stated:

> "Also, analysis of the asserted operative success reduces it to nothing more than the fact that the Hastings incubator at the Davis farm produced chicks from eggs. Whether or not it produced them cheaper or better or in a way that was an improvement in any other respect is not proven, and the fact that it was capable of producing chicks from eggs is quite unimportant because there were plenty of available incubators at the time which would do that."

That "analysis" is contrary to the evidence of record; for instance, in the Cooley case, Exhibit D-C includes on page 252 of the "Transcript of Record" which is Hall's Exhibit F, a letter dated April 10, 1911, from Walter B. Davis, who was a witness in that case, which letter is as follows:

"DAVIS POULTRY FARM,
Kings Highway and East 23rd St.,
Brooklyn, New York.

April 10, 1911.

To whom it may concern:

This is to certify that Prof. Milo M. Hastings has built and operated upon my poultry plant a mammoth incubator or hatchery, and that the results from same have equalled or surpassed the results from competing Cyphers incubators, which are considered as the leading make of small hatchers.

The Hastings Hatchery has been running continuously upon my farm for about two months without

serious mishap or failure, yielding as high as eighty-six per-cent. hatches of fertile eggs from yarded stock, which I consider very good indeed.

Even with the small scale upon which we have operated and with the handicap of initial construction expense this hatchery has been much cheaper to build and operate than the prevailing type of incubators. I see no reason why this expense could not be greatly reduced and completely out-distance small incubators for large plants.

(Signed) Walter B. Davis,
Proprietor, Davis Poultry Farm."

That contemporaneous written record of the result of use of the Hastings incubator, and method of incubation, under the supervision of Davis in the Spring of the year 1911, which was published at that time, controverts the erroneous conjectures of Counsel for Smith in said Brief.

Moreover, as shown in that same Hall's Exhibit F, page 254, there was offered in evidence as part of Cooley's Exhibit D-C, a copy of a letter dated May 20, 1911, from Francis W. Orvis, Editor of the Poultry Digest, then being published at 57 Ann Street, New York City, and as follows:

"POULTRY DIGEST
57 Ann St.,
New York City.

May 20, 1911.

To Whom it may concern:

The writer has visited the plant of Walter B. Davis in Brooklyn, N. Y., where Mr. Milo Hastings is operating a unique device which he hopes will simplify the hatching problem.

A small room was so arranged that with the various devices of Mr. Hastings', heat, moisture and ventilation were under perfect control and the eggs and

chicks were as easily accessible as in the opening of a bureau drawer. The little fellows were coming out and new eggs added daily, making a continuous hatching proposition under absolute control of the operator.

The percentage of eggs hatched the day the writer visited the plant was somewhat better than obtained from the same grade of eggs hatched in ordinary incubators running at the same time and under the same conditions.

Mr. Hastings 'hatchery' will probably do for the poultry business what the separator has done for the dairy business.

(Signed) Francis W. Orvis,
Editor, Poultry Digest."

Certainly that letter describes staged incubation being practiced in that Brooklyn incubator, and confirms said testimony of Chambless, in the Cooley case, and the testimony of Hastings, Davis, and Mrs. Davis, in the present case.

Point VII: Francis W. Orvis, Editor of Poultry Digest, Was Not Called as a Witness by Petitioner in Either of the Instant Hall and James Cases for the Reason That He Would Have Confirmed the Testimony of the Witnesses in the Hall Case.

On page 22 of "Brief for Petitioner" it is asserted concerning Milo M. Hastings, "He first disclosed his idea to Francis W. Orvis, the Editor of 'Poultry Digest' who was not called as a witness by the defense in either case and whose absence was not explained". "Neither Miller nor the helper was called as a witness by Respondents, nor was their absence accounted for".

Counsel for Hall Brothers informed the Court below that we made a diligent search for Orvis, Miller, and said helper with the result that we were credibly informed that they were dead.

It was not until Petitioner's Counsel Albert L. Ely, Edmond M. Bartholow, and Geo. C. McConnaughey filed their Brief on appeal in the United States Circuit Court of Appeals for the Second Circuit that they disclosed in line 3 et seq. on page 16 thereof "As a matter of fact Orvis is alive today and lives in Hackensack, N. J."

Why did not Petitioner's Counsel call Orvis as a witness to contradict the testimony of Respondents' three witnesses Milo M. Hastings, Walter B. Davis, and Mrs. Davis? The answer is that if called Orvis would have corroborated the testimony of said witnesses, as is clearly indicated by the letter of "Francis W. Orvis, Editor, Poultry Digest" dated **May 20, 1911**, reproduced on page 254 of the Cooley record including your Respondents' Exhibit F, and above quoted, (pages 23, 24), wherein Orvis described the incubator which he had inspected at the farm of Walter B. Davis and staged incubation he saw therein.

Point VIII: The Claim in Suit is Invalid Because of Prior Inventorship by Milo M. Hastings, Prior Knowledge, Prior Public Use and Prior Sale.

R. S. §4886 is as follows:

> "Any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvements thereof, not known or used by others in this country, before his invention or discovery thereof, and not patented or described in any printed publication in this or any foreign country, before his invention or discovery thereof, or more than two years prior to his application, and not in public use or on sale in this country for more than two years prior to his application, unless the same is proved to have been abandoned, may, upon payment of the fees required by law, and other due proceeding had, obtain a patent therefor."

The testimony of Hastings and Mr. and Mrs. Davis is clearly to the effect that the invention of the claim in suit was not only known to others in this country long before the Petitioner Smith's alleged conception thereof, in the "Spring of 1914" but was in long continued public and successful commercial use, in this country, more than two years prior to Petitioner's application for the patent in suit, which was not filed until October 26, 1916.

PRIOR KNOWLEDGE BY OTHERS PRIOR PUBLIC USE.

Milo M. Hastings' invention of the subject matter of claim 1 of the patent in suit was not only known to others in this country, as evidenced by Defendants' Exhibit F where the names of **eleven** of them appear, as noted on page 12, supra, but was known to many hundreds of people who visited the poultry farm of Respondents' witness Walter B. Davis while Hastings was there employing that method of hatching in the incubator which he had erected for Davis.

Defendants' Exhibit G is a booklet entitled "Davis Poultry Farm" published and copyrighted in 1911, and is not only evidence that Davis had and was actively conducting a comparatively large poultry business in the year 1911 but that the public was invited to inspect and did inspect the equipment of that poultry business which Davis conducted on a rented property at Kings Highway and 23rd Street, in Brooklyn, New York, which was the address of Milo M. Hastings, as shown by the Official letters in Defendants' Exhibit F (Hall Rec. pp. 248, 254, 256, 259).

Exhibit G contains an express invitation to the public to inspect the facilities Davis had for the production of poultry, and Davis testified (Hall Rec. pp. 57-58, f. 86-87) that an edition of 2000 of those booklets was distributed and that, in response to the invitation therein, "thousands"

of people visited his farm and examined the equipment thereof. Hastings testified (Hall Rec. pp. 53 and 54, f. 80-81) "The catalog states 'Visitors Welcome'. • • • I remember seeing that catalog in circulation and given out", and that the eighth page thereof shows a photographic reproduction of a picture including said Mr. Orvis (Francis W. Orvis), to whom Hastings explained his invention before meeting Walter B. Davis.

The testimony of Messrs. Hastings and Davis and Mrs. Davis agrees that the building in which said incubator was erected in accordance with Hastings' design and under his supervision and in which his method of hatching was successfully practiced for a considerable period of time (Hall Rec. p. 52, f. 78-79, p. 59, f. 88-89, and p. 60, f. 89) was used not only as a residence but as a roadhouse where "thousands" of visitors were entertained (Hall Rec. p. 58, f. 87, p. 60, f. 90). Mr. Davis mentioned the fact that upon one occasion he slaughtered over 200 chickens to feed the visitors who had responded to his invitation (Hall Rec. p. 60, f. 90).

Every expression of Milo M. Hastings, cited by Counsel for Petitioner as supporting their argument that the Brooklyn incubator was "carefully guarded from the public", as alleged in lines 9 and 10 on page 9 of said "Brief for Petitioner", was in fact expressly limited to time prior to the filing of his application for patent. (Hall Rec. p. 56, f. 84.)

Therefore, it is submitted that Respondents have clearly proven the fact that the method of hatching described in Smith's claim 1 in suit was not only "known to others" but in "public use" and repeatedly successfully used on the Davis poultry farm at least three years before the Spring of 1914, the date of conception of the subject matter of claim 1 in suit alleged by Petitioner.

The testimony of Mr. and Mrs. Davis agrees that owing to serious financial losses incident to his investment in an aviation project (Hall Rec. p. 60, f. 89; p. 63, f. 93)

Mr. Davis was compelled to terminate, at the end of the year 1913 (Hall Rec. p. 60, f. 89) his lease of said premises at Kings Highway and 23rd Street, Brooklyn, and consequently relinquish his poultry business there conducted, and thereafter occupy himself with his linotype printing business. That Mr. Davis was able to remove the four Cyphers incubators forming part of the poultry producing equipment on said premises and thus salvage them because they were portable (Hall Rec. p. 61, f. 91). That Mr. Davis was unable to remove the incubator which he had bought from Mr. Hastings which was not only too large to remove intact (Hall Rec. p. 61, f. 91) but was built into the cellar so that it was necessary to tear its wooden walls to pieces to get it out in order to restore the premises to the condition in which he rented them. Therefore, said Hastings incubator was thus destroyed, but not until December, 1913 (Hall Rec. p. 60, f. 89).

THE METHOD OF THE CLAIM IN SUIT WAS NOT ONLY "ON SALE" IN THIS COUNTRY, BUT SOLD MORE THAN TWO YEARS PRIOR TO THE APPLICATION FOR THE PATENT IN SUIT.

Respondents have proven by the testimony of their witnesses Milo M. Hastings, Walter B. Davis, and the latter's wife, that **before** Hastings had filed his application aforesaid for Letters Patent of the United States, he not only had the invention subject matter of Smith's claim in suit in notorious public use but "on sale in this country for more than two years prior" to the application of Smith for the patent in suit, which was not filed until October 26, 1916.

Hastings testified (Hall Rec. p. 54, f. 80-81) that he had explained to Francis W. Orvis, then editor of the periodical "Poultry Digest" published at 57 Ann Street, New York City; (see p. 254 of the Cooley Transcript of Record containing Defendants' Exhibit F) his method of

hatching subseqnently disclosed in said Official record of his application for Letters Patent, and that testimony of Hastings and of Davis (Hall Rec. p. 58, f. 88) agrees in that Orvis introduced Hastings to Davis for the purpose of having the latter acquire and use that invention on his poultry farm which is described and illustrated in the booklet entitled "Davis Poultry Farm", which is Defendants' Exhibit G.

The testimony of Hastings (Hall Rec. p. 52, f. 78; p. 54, f. 81; p. 56, f. 85) and Davis (Hall Rec. p. 59, f. 88) agrees in that the arrangement between them was that Davis paid for the materials necessary for the construction of an incubator in accordance with Hastings' ideas and also paid Hastings a monetary consideration for his services in supervising that construction, which was also payment to Hastings for the continued right of Davis to use Hastings' method of hatching aforesaid in that incubator structure.

The testimony of Hastings (Hall Rec. pp. 56-57, f. 85) confirmed by both Mr. Davis (Hall Rec. p. 59, f. 88) and Mrs. Davis (Hall Rec. p. 62, f. 92) is that Hastings received from Davis the full amount of such consideration agreed upon. Hastings thus effected a sale of his invention within the meaning of R. S. 4886 both as to his incubator structure and the method of hatching, certainly as early as the Spring of 1911, and thus **three years before** the date alleged by the Petitioner Smith as the date of conception of his invention of claim 1 here in suit, to wit, the "Spring of 1914".

Point IX: The New Evidence, in the Hall Case, Includes the Admissions by Petitioner's Expert, Joseph I. Taggart, That Petitioner Not Only Failed to Disclose in the Patent in Suit the Only Way the "Method of Hatching" of Claim 1 May Be Effected, But Specified as an Essential of His Invention That the Eggs Be Subjected to a Certain Minimum Temperature of Air During Their Early Stage of Incubation, Which, in Fact, Would Be Too Hot, and "Fatal to Practically All of the Eggs", and That Such Fatal Result Could Not Be Avoided by Any Adjustment of Humidity of the Air, as Argued by Petitioner's Counsel.

The only information, in said patent in suit, as to the temperature **of the air** to be maintained during the method of hatching of Petitioner's claim 1, is in the statement in line 40 et seq. on page 1 of said patent, as follows:

> "The temperature of circulating air should be such as will prevent the eggs in the early stage of incubation from falling below 100°."

That statement is untrue for, as admitted by Petitioner's witness Taggart (Hall Rec. pp. 46-47, f. 70-71), the air must be at a temperature of at least 100½° F., perhaps 100¾° F., to prevent the eggs in the early stage of incubation from falling below 100° F., and, as admitted by Taggart (Hall Rec. p. 47, f. 71-72), "if you subjected eggs to such a temperature of air that they do not fall below 100° F. in the early stage or first ten days, *it would be fatal to practically all of the eggs.* That was my discovery. In the Waxham case I testified that '*Even with the proper humidity,* 99¼° is too hot for a Smith incubator'." (Italics ours.)

Therefore, it is unquestionable, in view of the testimony of the Petitioner's own witness Taggart, that the success or failure of the method of hatching, subject matter of claim 1 in suit, is dependent upon precise determination and maintenance of the critical correct temperature

of the air less than 99¼° F. in the closed chamber where incubation is being effected, but the patent in suit not only fails to afford that information, but clearly and specifically directs the performance of the method under different conditions at a higher temperature which said witness Taggart admits would be "fatal to practically all of the eggs". The reasonable inference is that the Petitioner Smith himself did not know, even as late as the issuance of his patent on April 16, 1918, that an air temperature of 99° F. must be maintained in the "closed chamber" to effect the method of hatching of claim 1 in suit.

That reasonable inference is made a certainty by the testimony of Petitioner's witness Taggart (Hall Rec. p. 48, f. 72) that it was not until the year 1923 that he Taggart, by a series of experiments and tests, determined and disclosed to Smith incubator users that the teaching of the patent in suit was erroneous, and that the maximum temperature of the air which it was safe to use in the method of hatching of claim 1 in suit was but 99° F. as he testified (Hall Rec. p. 47, f. 71-72) "Even with the proper humidity, 99¼° is too hot for a Smith incubator".

It appears from the foregoing comparison of the disclosures of the patent in suit with the scientific facts to which Petitioner's witness Taggart testified, that Smith not only failed to disclose the correct use of the incubator structures disclosed in his patent, but gave clear and specific instructions for use thereof which are not only misleading but fatally defective.

Note: In view of the argument on pages 87, 88 and 89 of "Brief for Petitioner" to the effect that the fatal result of following the Petitioner's instructions in the patent in suit as aforesaid, might be avoided by proper humidity of the air in the incubator; it is noted that Petitioner's Counsel Albert L. Ely sought to have his witness Joseph I. Taggart support that contention by his testimony, but Taggart was too honest to do so and testified as aforesaid (Hall Rec. p. 45, f. 71-72), "Even with the proper humidity, 99¼° is too hot for a Smith incubator."

Consequently, Petitioner's method claim 1 is invalid and void because his disclosures in the patent in suit as to the operation of the **only incubator** therein shown are not only insufficient to effect the method of hatching contemplated in said claim, but would prevent any **hatching** of eggs treated in the manner prescribed in the patent in suit.

In that argument, on page 88 of "Brief for Petitioner", is the adroit statement: "Up to 1928 when the higher humidity came into general use, Smith and his licensee, The Buckeye Incubator Company, had operated successfully over a long series of years at temperatures within the range stated in the specification (Hall Rec. p. 49)." That statement is not supported by the record cited.

There is no "range" of temperature of **air** stated in the Petitioner's patent specification. The only range stated is in line 15 et seq. on page 1 of said patent, as follows:

> "There is a forced circulation of hot air through the chamber which is adapted preferably to *maintain all eggs* at temperatures between 100° and 105° Fahrenheit approximately" (italics ours).

As clearly and specifically stated by Petitioner's witness Taggart, to follow that instruction would be "fatal to practically all of the eggs". It appears from Taggart's testimony (Hall Rec. p. 47, f. 72) that he sought to excuse the fatal instructions given by Petitioner in his patent on the ground that Petitioner was ignorant of the actual facts.

Said argument implies that the method of hatching, subject matter of Petitioner's claim 1, has been effected in accordance with the specific instructions of the patent in suit. In accordance with the explicit instructions found in line 40 et seq. on page 1 of said patent

"The temperature of circulating air should be such as will prevent the eggs in the early stage of incubation from falling below 100°."

As clearly and explicitly testified by Petitioner's expert Taggart, such procedure would have been "fatal to practically all of the eggs". Within Taggart's knowledge, it was **never** practiced, even experimentally. (Hall Rec. p. 47, line 1 et seq.)

It is a weird proposition, advanced in "Brief for Petitioner", that the specification of the patent in suit is to be disregarded in the consideration of claim 1 thereof based upon that specification, and Petitioner's erroneous instructions in the specification as to the conditions necessary for the conduct of the method of hatching of claim 1 though false and fatal, should be excused and Petitioner's patent held valid because, as they assert, Petitioner was ignorant of the scientific facts pertaining to incubation.

Point X: Petitioner's Claim 1 in Suit is Invalid and Void Because in Obtaining the Same He Did Not Comply With the Specific Requirements of R. S. 4888, As to Disclosure.

R. S. 4888. "Before any inventor or discoverer shall receive a patent for his invention or discovery, he shall make application therefor, in writing, to the Commissioner of Patents, and shall file in the Patent Office a written description of the same, and of the manner and process of making, constructing, compounding, and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art or science to which it appertains, or with which it is most nearly connected, to make, construct, compound, and use the same; and in case of a machine, he shall explain the principle thereof, and the best mode in which he has contemplated applying that

principle, so as to distinguish it from other inventions; and he shall particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery. The specification and claim shall be signed by the inventor and attested by two witnesses."

In support of Respondent's contention as to invalidity of the Smith claim in suit for lack of disclosure, attention is called to the following decisions:

In Health Products Corp. v. Ex-Lax Mfg. Co., Inc., 22 F. (2d) 286, the Circuit Court of Appeals for the Second Circuit held that the specification of a patent must be more than a suggestion for promising experiment, and that the specification must contain complete directions leading with certainty to result. Citing Matheson v. Campbell, 78 F. 910, 916 (C. C. A. 2d); Leonard v. Maxwell, 252 F. 584; 590 (C. C. A. 2d); Electro Dynamic Co. v. U. S. L. & H. Corp., 278 F. 80, 84 (C. C. A. 2d).

In Permutit Co. v. Graver Corp., 284 U. S. 51, the Supreme Court stated that a patent which fails to describe in the specification the principle of the apparatus in such terms that any person skilled in the art to which it appertains may construct and use it after the expiration of the patent, then such patent is void.

In Stelos Co. Inc. v. Hosiery Motormend Corp. et al., 60 F. (2d) 1009, the Court held that it is settled law that disclosure of a patent must be so clear as to enable an ordinary workman skilled in the art to practice the invention without further experiment. Citing Beidler v. U. S., 253, U. S. 447, 453. Health Products Corp. v. Ex-Lax Mfg. Co., Inc., 22 F. (2d) 286, 287 (C. C. A. 2d). The Court states that the reason for this is that the disclosure of a patent is not addressed to persons of extraordinary skill and imagination but merely to the ordinary workman who is capable of using the amount of skill and intelligence fairly to be expected from him in the practice of his art.

Stelos Co., Inc., v. Hosiery Motormend Corp. et al., supra, went up to the Supreme Court on writs of certiorari and the Supreme Court in 295 U. S. 237; 55 S. Ct. 746, affirmed the foregoing proposition and the opinion of the District Court for the Southern District of New York that claim 23 of the reissue patent involved in said Stelos case was invalid for want of proper disclosure.

In Helfreich v. Solo, 59 F. (2d) 525, 528, the Court held that a patent must disclose the proper proportion of the ingredients necessary to produce the result which was claimed in the patent. The Court states that the fact that testimony in the case discloses the proper proportions of kaolin to chalk will avail the patentee nothing, for his claims and his oral testimony cannot be permitted to broaden the disclosures of the specification.

In Zenithern Co. v. Art Marble Co., 56 F. (2d) 39, the Court held the process claim of the patent invalid for want of such sufficient disclosure as would enable one skilled in the art to produce the product by the disclosed process. The Court stated at page 42:

> "The whole argument for the validity of this claim comes from confusing the claim with the present product Zenithern. It seems to be a meritorious and perhaps a novel product deserving of a patent, but its proportions and the secret of its manufacture are not to be found in this patent. It is claimed that Welsh, the infringer, learned them by working in the Zenithern plant. The patent, had it made proper disclosure, would have told him all there was to know.

The situation in the Zenithern case supra parallels that in the instant case, in that the argument that claim 1 of the Smith patent here in suit is valid is based upon confusion of the actual disclosures of the Smith patent with the present method of operation of the Smith incu-

bator which was in fact discovered by Smith's witness Taggart four years after the Smith patent was granted. As admitted by Taggart, if the teachings of the Smith patent were followed in the method of hatching defined in claim 1 here in suit, that method would kill the embryos in the eggs instead of hatching them, because the temperature prescribed by Smith in his patent is "too hot".

In Hale Mfg. Co. v. Hafleigh & Co., 52 F. (2d) 714, 719, the Court held that a claim is invalid because not supported by the disclosure of the specification where extensive experiments would be necessary before it could be determined what proportions would produce a commercial result.

In United Drug Co. v. Ireland Candy Co., 51 F. (2d) 226, 230, the Court held that claims of a patent were invalid where from the teaching of the patent no one skilled in the art could construct and operate its device without experiments to determine the proper speed at which it must be driven. The Court states that it condemned indefiniteness of this nature in Cleveland Gas Burner v. American Heater Corp., 38 F. (2d) 760, 762, setting forth an excerpt from its opinion in that case with cited Supreme Court cases sustaining that proposition.

See also Steward et al. v. American Lava Co., et al., 215 U. S. 161; Beidler v. U. S., 253 U. S. 447; Reflectolyte Co. v. Luminous Unit Co., 20 F. (2d) 607.

In Diamond Rubber Company v. Consolidated Rubber Tire Company, 220 U. S. 428-436, 55 L. Ed. 527, the Court stated as to the requirements upon the inventor and patentee, "He must not put forth a puzzle for invention or experiment to solve".

In American Gas Accumulator Co. v. Prest-O-Lite Co., 9 F. (2d) 784, the Dallen patent 904,138 was held void for lack of disclosure as required by Section 4888 R. S., where it was shown that such material and the proportions designated in the formula given in the specification would not produce the results claimed.

In Roba et al. v. Martin Dennis Co., 263 F. 386, it was held that "Revised Statute 4888, and the purpose of the Patent Laws, require a full disclosure of the invention before the patent is granted, in order that the public may, at the expiration of the patent, have full use of the invention".

In Columbia Motor Car Co. v. C. A. Duerr & Co., 184 F. 893, the Court said "The public gained absolutely nothing from his invention, whatever it was. From the view of public interest it were even better if the patent had never been granted. • • • Its description must explain the invention itself, the manner of making it, the mode of putting it in practice. In the absence of knowledge of these points, the invention is not available to the public without further experiments and further exercise of inventive skill".

Smith failed to disclose the **only** essential factor of his method, viz., limitation of temperature of air in the incubator to 99° F. The undisputed fact that Smith and his corporations have, by high pressure salesmanship, induced the public to buy incubators resembling that shown in the patent in suit, is no evidence of patentability of the method claim here in suit. In Globe-Wernicke Co. v. Fred Macey Co., 119 F. 696, 56 C. C. A. 304, the Court said "The fact • • • that these book cases have gone into extensive use is due, as we think, to the elegant workmanship employed in their manufacture, and the convenience of having the sections separable, aided by the energy with which, as the bill states, they were pressed upon the market".

The proper test is comparison of Smith's patent disclosures with the disclosures of the prior art; from which it appears that "The public gained absolutely nothing from his invention, whatever it was. From the view of public interest, it were even better if the patent had never been granted". The effect of the grant was not only to grossly mislead those striving to learn the proper condi-

tions for incubation, but Petitioner Smith has used it to terrorize the public from constructive development of the art.

Point XI: During the Long Course of Litigation of said Smith Patent in Suit, Petitioner Has Persistently Misrepresented Scientific Facts Concerning Incubation and the Relation Thereof to the Disclosures of Said Patent, in Evidence and Arguments Presented to Courts, Including This Court.

An effective instrument in such misrepresentation is Petitioner's Exhibit 13. Petitioner's Exhibit 13 (Hall Rec. p. 126) is a "Graph Showing Development of Heat Units in Incubation", made by his expert witness Joseph I. Taggart, whose initials appear adjoining the date "12/22/28" thereon. It presents a fraction of truth, so as to be grossly misleading to the numerous Courts to which it has been presented since that date, with glib statements that the "heat units" referred to in said "Graph" are calories, of which "(.252 calories equal one B. T. U.)". See the first paragraph at the bottom of said "Graph".

The **blue** area on said "Graph" purports to represent the heat required, during the first ten days of incubation, to raise eggs to, and keep them at, the "incubating temperature" referred to in the legends thereon, which temperature is represented by the single horizontal line extending at the **top** of the **blue** area and **bottom** of the **red** area. The **red** area represents the "excess heat" given off by such eggs during the last eleven days of incubation.

That red area is more than three times greater than the blue, **misrepresenting** that the eggs **generate** more than three times as much heat as they absorb during the twenty-one days of incubation.

Under cross-examination Taggart admitted (Hall Rec. p. 46, f. 69-70) that said "incubating temperature" must be neither more nor less than ninety-nine degrees Fahrenheit. That the rise in temperature from the **tenth**

to the **eighteenth** day is but one degree Fahrenheit and that the **highest** temperature of the eggs is not attained until the **twenty-first day**, as shown by said Petitioner's Exhibit 13 (Hall Rec. p. 126).

Consequently, the vertical distance of 1.6 inches from the bottom of the "Red curve" to where the "Black Curve" crosses the vertical "18" day line on said "Graph" represents but **one degree F.**, and the **bottom** line of said "Graph" represents an **initial egg temperature** of 98.75° F.!

On the contrary, it is a matter of common knowledge that whether the eggs are gathered from a barn floor, freight station platform, or cold storage refrigerator; their **initial** temperature is more than 50° F. **lower** than 98.75° F.

> NOTE: It has been the practice in the art of incubation, for many years, to store eggs which are to be incubated, at a temperature not exceeding 45° F., until it is desired to incubate them, to prevent them from spoiling before they are introduced to the incubator.

Therefore, to present the **whole** truth the **blue** area of said "Graph" should be extended, vertically downward, more than **eighty inches** (50 times 1.6 inches) below the bottom line of said "Graph", to indicate the **actual** initial temperature of the eggs submitted to incubation.

When that is done the truth appears that the **quantity** of heat **generated** by the eggs and fully manifested by the **red** area of said "Graph" is but a **minute and negligible fraction** of the whole quantity of heat required to hatch eggs by the method of said claim 1, and the Petitioner's propaganda to the contrary urged for the past **19** years, first, upon the Commissioner of Patents, to obtain said Letters Patent, and, later, upon prospective customers, and, finally, upon numerous Courts, including this Court, was and is false and fraudulent.

Point XII: Contrary to Arguments on Behalf of Petitioner, the Method of Hatching of Claim 1 in Accordance With His Directions is Less Efficient Than Was Attained in Hastings' Incubator At the Davis Poultry Farm and Considerably Less Efficient Than the Different Method of Incubation and Hatching Practiced by the Respondents Hall Brothers.

In the trial of Samuel B. Smith v. F. J. LeMieux, La Plant Hatcheries, at Milwaukee, Wisconsin, on May 9, 1935, cited in "Brief for Petitioner", witnesses subpoenaed by Petitioner disclosed that use of his "method of hatching" during the hatching season of the year 1935 resulted in hatching not more than 35% of all of the eggs set.

In contrast: It is noted that since the Fall of the year 1930 the only method of hatching used by Respondents, Hall Brothers, was effected in a hatching chamber containing only eggs which have reached the eighteenth day of their incubation (Hall Rec. p. 41, f. 63-64), which hatching chamber is separate and apart from any chamber containing eggs in any earlier stage of incubation. (Hall Rec. p. 64, ff. 95-96). The evidence (Hall Rec. p. 64, f. 96) that the use of that separate hatching method by Respondents has enabled them to hatch between 85% and 90% of the eggs set, was undisputed.

THIS COURT DECEIVED.

In view of the use of that separate hatching method not only by these Respondents but by many other defendants named in suits by your Petitioner; this Court was deceived to the erroneous belief, (set forth in Hall Rec. p. 100, f. 148) "the eggs passed into the more advanced stages of incubation, *reaching their highest temperature about the seventeenth day*" (italics ours). That statement is contradicted by the admissions of Petitioner's witness Taggart (Hall Rec. p. 46, ff. 69-70) in his testimony re Plaintiff's Exhibit 13 (Hall Rec. p. 126), and clearly and specifically to the effect

that even at the end of the **eighteenth** day the eggs have only reached a temperature of 100° F., whereas, the **highest** temperature, of 105° F., is not reached until the twenty-first day, as shown by said Exhibit 13.

Re Petitioner's "POINT I".

On page 15 of "Brief for Petitioner" in interpretation of Smith's claim 1, it is stated:

> "In order to secure the benefits of the invention, intelligent use must be made of staged incubation so as to secure an approximate balance between the endothermic and exothermic eggs. A mere hit and miss setting of eggs of varying ages will not suffice, for if only a small percentage of the eggs is in one stage, and the great mass in another, obviously the preponderance of cold, or hot, eggs will destroy the necessary balance which should be maintained."

There is no suggestion in Petitioner's claim 1, or the specification of the patent in suit, of any such "balance between the endothermic and exothermic eggs". On the contrary, as clearly shown in Fig. 3 of Petitioner's patent, the proportion of "cold" eggs to "hot" eggs is indicated by the fact that sixty trays are provided for the former and only fifteen trays provided for the latter. Certainly, there could be no balance of temperature between the cold and hot eggs under such conditions.

As fully set forth supra, with reference to Petitioner's Exhibit 13, the heat **generated** by the hot eggs is a negligible factor in comparison with the heat **required** by the cold eggs when arranged as specified and shown in Petitioner's patent in suit.

The essential factor is the **artificial heat** furnished by the "Coils of heating pipe 23" described in line thirty-six on page 2 of said Smith patent, and shown in the upper portion of Fig. 3 thereof, and such heat **must** be controlled and varied **automatically**, to maintain the critical temperature of the air.

It is to be particularly noted that as testified in the Hall case (Hall Rec. p. 58, f. 87), Hastings' Brooklyn incubator included **both** a "mercury controlled governor" and other "**thermostatic** control" means for precisely controlling the gas burning heater for the air in the incubator, for the purpose of precisely controlling the temperature of that air (Hall Rec. p. 59, f. 88).

Petitioner adopted that "thermostatic control" feature of Hastings' incubator, six years later, in the **specification** of his application for the patent in suit filed October 26, 1916, (p. 2, line 96 et seq.) but only **illustrated** an incubator structure devoid of any such controlling means; the only means therein shown for controlling the steam heating pipes 23 being the small valve indicated at the left hand side of Fig. 3, which is not reference marked or described, but is obviously intended to be only manually operated.

Moreover, although Petitioner's patent in suit only shows an incubator inclosure formed of **single** uninsulated walls; Petitioner later adopted in his commercial structure and continues to use the idea of forming an incubator inclosure with **double** walls having heat insulating material between them, which was embodied in Hastings' Brooklyn incubator, as shown in Cooley's Exhibit drawing D-D, infra, and shown in Hastings' application drawing (Hall Rec. p. 283), and reproduced on page 24 of "Brief for Petitioner".

PRIOR ART.

A copy of each of the prior art patents cited is included in pages 307 to 415 in the Transcript of Record in the Cooley case, which is the book containing Hall's Exhibit F, including those reviewed by Mr. Justice Stone in Plaintiff's Exhibit 2 (Hall Rec. pp. 1[illegible]-110, f. 162). As there stated by Mr. Justice Stone:

> "The German patent, Stulik, No. 155,917; issued in 1901, disclosed the arrangement of trays of eggs in staged incubation in an enclosed column or stack, with

> the endothermic eggs at the bottom. The eggs were subjected to a rising column of heated air, which was allowed to escape at the top of the chimney. There was no forced draft of air, no circulation or re-circulation of air, and in consequence no carrying of heat units from the more advanced eggs at the top to the less advanced eggs at the bottom."

The earlier Winkler U. S. Patent No. 286,756 (cited Hall Rec. p. 110, f. 162) also discloses such staged incubation in lines 52-61 on page 2 thereof, Cooley Rec. p. 318. Therefore, Mr. Justice Stone concluded (Hall Rec. p. 110, f. 163) that the distinction between the prior art disclosed to the Supreme Court and the subject matter of claim 1, was the "application of a continuously circulating current of air to eggs in staged incubation".

However, the proofs on behalf of Respondents in this case show that the Petitioner was not even the originator of that principle of combination of prior art ideas. It was originated by Milo M. Hastings.

> The evidence upon which the decision of the Second Circuit Court is predicated is clearly conclusive that Hastings constructed and operated **three** incubators embodying that same principle; successively at Brooklyn, Muskogee, and Port O'Connor, and all **before** the "Spring of 1914", the date alleged by Petitioner for his first conception of the invention in suit.

PETITIONER'S PRIOR ART CONTRIBUTION.

That principle, of combining staged incubation with a continuously circulating current of air, was not only known in the prior art, supra, but practiced by the Petitioner Smith in the year 1912, at Attica, Ohio, more than four years before he filed his application for the patent here in suit. He was commercially operating incubators at Attica

and had one, of 15,000 egg capacity, wherein a fan was driven by a steam engine.

Petitioner Smith testified concerning that incubator, as appears on page 219 in the Record of the Cooley case (Hall Exhibit F), as follows:

> "RXQ166. In other words you had stage incubation at Attica in 1912. A. Yes.
>
> RXQ167. What was the capacity of that forced draft incubator at Attica? A. I could not say exactly now, but something like 15,000.
>
> RXQ168. Was the fact that hatches as you say were not good due to the fact that you did not have sufficient fan capacity? A. The fan capacity in conjunction with the construction of the machine.
>
> RXQ169. Just how was it constructed? A. The heater and fan were at one end and it blew the air across the top and down through the trays and came down to the bottom and returned to the fan and heater.
>
> RXQ170. In this Attica machine did the current of air pass through the trays? A. You mean with the steam engine?
>
> RXQ171. The steam-engine-operated one. A. Yes.
>
> RXQ172. So that in that device you had the current of air passing through the eggs from the most advanced stage to those of a lesser-advanced stage of incubation? A. Yes."

Point XIII: Respondents Have the Right to Rely Upon Disclosures of the Official Record of the Hastings Abandoned Application, Found in Halls' Exhibit F, as Evidence of Prior Invention or Discovery Relative to That of the Smith Claim in Suit.

In U. S. Blind Stitch Mach. Corp. v. Reliable Mach. Works, Inc., an opinion was filed November 6, 1933, by the Circuit Court of Appeals for the Second Circuit, as reported

in 67 F. (2d) 327-329. It appears from that opinion that appellee pleaded anticipation of the patent in suit by a prior abandoned application and practical use by appellee's customer Pomeranz of the disclosures shown in that application. That application was filed on June 20, 1925, disclosing a machine for treating furs and claiming both the apparatus and the method of its use, but, following rejection upon citation of a prior patent, that application was abandoned on May 2, 1927.

The Circuit Court of Appeals for the Second Circuit states in its opinion at page 328:

> "We think that claims 1 and 2 are anticipated by the Pomeranz previous application, which was filed June 20, 1925. That petition for a patent provided for an improvement in a machine for fur electrifying, ironing, and curling. The invention is established by the testimony of the inventor, his patent draftsman and attorney, as well as by documentary proof, to wit, the abandoned application and original drawing. This was filed nearly three years before the patent here in suit. • • • The machine was used by Pomeranz in his business in 1925 and thereafter to 1929 and was dismantled when he obtained the machine from the appellee. Pomeranz testified that he had an actual, full-size machine made prior to the date of appellant's application. The machine was shown to various people who came into the place of business and was operated on furs from 1925 to 1929. • • • It was in open and notorious use for anyone to see who visited the factory. There is ample corroboration of this use. No secrecy was maintained as to it."

The fact situation in the instant case parallels precisely the state of facts in the cited case. In the instant case, the invention of Hastings is established by the testimony of the inventor (Hastings), by Walter B. Davis, and by Mrs. Wal-

ter B. Davis, as well as by documentary proof, to wit, the abandoned application which was filed in the United States Patent Office on May 3, 1911. This date is three years before the earliest date of conception claimed by Smith herein. As in the Second Circuit case, in the instant case a machine was used by Hastings and Davis at the Davis Poultry Farm in 1911 and thereafter dismantled. Hastings, like Pomeranz, testified that he had an actual, full size machine made more than two years prior to the date of conception of Smith. As in the cited case, the Hastings machine was shown to various people who came into the place of business of Davis and was used to successfully hatch chicks in 1911. As in the cited case, the Hastings machine was in open and notorious use at the Davis Poultry Farm for anyone to see who visited the Farm. It was testified by both Mr. and Mrs. Davis that hundreds and hundreds of people visited the Davis Poultry Farm. As in the cited case, no secrecy was maintained as to the construction and method of operation of the Hastings incubator built and used on the Davis Poultry Farm.

Said decision of the Circuit Court of Appeals for the Second Circuit cites Corona Cord Tire Co. v. Dovan Chemical Corp., 276 U. S. 358, 48 S. Ct. 380, 72 L. Ed. 610.

In the latter decision, which was rendered April 9, 1928, defendant contended that the claims of the patent in suit for a process of curing rubber were anticipated by prior use by Kratz. Plaintiff contended that what Kratz did was merely abandoned laboratory experiments. In line 13 et seq. on page 383, it was held that "A process is reduced to practice when it is successfully performed". In line 21 et seq. on page 384, it was held that "It is a mistake to assume that reduction to use must necessarily be a commercial use. If Kratz discovered and completed, as we are convinced that he did, the first use of D. P. G. as an accelerator in making vulcanized rubber, he does not lose his right to use this discovery when he chooses to do so, for scientific purposes or purposes of publication, because he does not

subsequently sell the rubber thus vulcanized, or use his discovery in trade, or does not apply for a patent for it. It is not an abandoned experiment because he confines his use of the rubber thus produced to his laboratory or to his lecture room. It is doubtless true that Kratz, by his course in respect to his discovery as to the use of the D. P. G., has abandoned any claim as against the public for a patent, but that is a very different thing from saying that it was abandoned as against a subsequent discoverer or patentee".

The Court held the claims in suit invalid because of Kratz' prior uncommercial use.

Therefore, it is submitted that the foregoing decisions support Respondents' contention that Hastings' abandoned application, exemplified by Defendants' Exhibit F, plus evidence of the use of that invention effected by Hastings and Walter B. Davis, et al., is such anticipation of claim 1 of the patent in suit as to render the latter invalid and void.

Point XIV: No Use of a Method or Process Which Accomplishes the Result Sought Can Be Legally Classed As an Abandoned Experiment.

In Midland Flour Milling Co. v. Bobbitt (70 F. (2d) 416), on page 419, it is stated:

> "It is true that invention is not anticipated by experimental efforts which are abandoned before accomplishing the event achieved by the invention. In the instant case the experiment was successful, and the dust collector as installed in plaintiff's alfalfa mills successfully accomplished what he claims to have accomplished by his patent. Successful use of an art or instrument is not an experimental use, and an invention or discovery is not to be considered as an abandoned experiment merely because it was not applied to commercial use. Thomson Spot Welder Co. v. Ford Motor Co. (D. C.), 268 F. 836, affirmed (C. C. A. 6th), 281 F. 680, affirmed 265 U. S. 445, 44 S. Ct. 533, 68. L. Ed.

1098; Freydberg Bros. v. Hamburger (D. C.) 17 F. (2d) 300; Ficklen v. Harding (C. C. A. 2d), 273 F. 179; Buser v. Novelty Tufting Machine Co. (C. C. A. 6th), 151 F. 478; Brush v. Condit, 132 U. S. 39, 10 S. Ct. 1, 33 L. Ed. 251."

In International v. Gaylord, 140 U. S. 55; 35 L. Ed. 347; 11 S. Ct. 716, the Supreme Court of the United States held:

> "It is not experimental use where an inventor practises his art generally, teaching it to others and receiving pay therefor."

See also Smith v. Sprague, 123 U. S. 249; Consolidated v. Wright, 94 U. S. 92; Egbert v. Lippman, 104 U. S. 333; Elizabeth v. Nicholson, 97 U. S. 126.

Therefore, as Respondents have proven that Milo M. Hastings not only taught others to practice the art or method of hatching, of the Smith claim 1 here in suit, including Walter B. Davis and his employes at the Davis Farm, but certainly accomplished the successful and successive hatching of chicks on that Farm, which was a commercial use of that method both in the sense that Hastings was paid for it by Davis and in the sense that Davis used the chicks commercially; that use cannot legally be held to be an abandoned experiment, but was clearly an anticipation of said claim, rendering the latter invalid and void.

Point XV: Respondents Do Not Infringe.

The testimony of the Respondent A. B. Hall was not controverted or denied:

First: That Respondents have not, since the Fall of the year 1930, used any method of hatching whereby eggs were hatched in any chamber containing eggs at any earlier stage of incubation. (Hall Rec. p. 64, f. 95.)

Second: That, since the Fall of the year 1930, the only

method of hatching used by Respondents was affected in a hatching chamber containing only eggs which have reached the end of the eighteenth day of their incubation (Hall Rec. p. 41, f. 63) which hatching chamber is separate and apart from any chamber containing eggs in any earlier stage of incubation. (Hall Rec. p. 64, ff. 95-96.)

Third: That the temperature of the atmosphere in the incubators used by Respondents since the Fall of the year 1930 has been 99° F. (Hall Rc. p. 64, f. 95.)

Fourth: That the percentage of moisture in the air in the incubators used by Respondents since the Fall of the year 1930 has run from 35 to 45% humidity. (Hall Rec. p. 64, f. 95.)

Fifth: That the temperature of the atmosphere in the separate hatchers used by Respondents since the Fall of the year 1930 has been 98° F. (Hall Rec. p. 64, f. 95.)

Sixth: That the percentage of moisture in the air in the separate hatchers used by Respondents since the Fall of the year 1930 has been from 65 to 80% humidity. (Hall Rec. p. 64, f. 95.)

Seventh: That the method of hatching used by Respondents since the Fall of the year 1930 has the advantage that they can control the temperature in the incubators at a different degree than the temperature in the separate hatchers. (Hall Rec. p. 64, f. 95.)

Eighth: That the method of hatching used by Respondents since the Fall of the year 1930 has the advantage that they can separately control the percentage of moisture in the incubators and in the hatchers. (Hall Rec. p. 64, f. 95.)

Ninth: That the advantages above stated are mani-

fested by from 2 to 5% better hatches. (Hall Rec. p. 64, f. 96.)

Tenth: That the use of that separate hatching method by Respondents has enabled them to hatch between 85 and 90% of the eggs set. (Hall Rec. p. 64, f. 96.)

As illustrated by Petitioner's Exhibit 13 (Hall Rec. p. 126), during the twenty-one "days of incubation", the eggs are in two distinct stages, referred to in the claim in suit respectively as "the less advanced stage" and "the more advanced stage of incubation". The former stage comprises the first ten days, during which the eggs are absorbing heat from the surrounding air in the closed chamber; such "less advanced stage" being indicated by the area colored blue in said exhibit. "The more advanced stage of incubation" extends from the tenth to the end of the twenty-first day, during which the eggs are generating heat to the air surrounding them in said closed chamber, as indicated by the area colored red in said Exhibit 13. Consequently, as appears from said diagram, all eggs which have been subjected to incubation for eighteen days are in said "more advanced stage of incubation", generating heat, but are in a condition **three days remote from hatching.**

As testified by Petitioner's witness Taggart (Hall Rec. p. 46, f. 69-70) at the end of the eighteenth day of incubation the eggs have only reached a temperature of 100° F., whereas, the **highest** temperature, of 105° F., is not reached until the twenty-first day, as shown by said Exhibit 13.

Consequently, Respondents' method of hatching above characterized is essentially different from that of the Smith patent and claim 1 in suit in that all of the eggs which have reached the eighteenth day of incubation are removed and isolated from any eggs in the less advanced stage and, therefore, not in the heat interchanging relation with the eggs in the less advanced stage required by the specific terms of said claim in suit, and the heat generated by those eggs from the eighteenth day to the twenty-first day is not carried to

the eggs in the "less advanced stage" as required by the terms of said claim.

Therefore, the method of hatching employed by the Respondents "since the Fall of 1930" certainly does not include the two features of that method claim referred to on page 8 hereof as follows:

(j) maintaining in the same chamber **during the hatching**, eggs of "more advanced stage of incubation" with others "in a less advanced stage".

(k) carrying "units of heat" from the eggs in the more advanced stage of incubation to those "in a less advanced stage", **during the hatching**.

Therefore, Respondents certainly have not infringed said claim by the only method of hatching they have employed **"since the Fall of 1930"**.

Moreover, Respondents have not **at any time** infringed any legal right of the Petitioner, because the claim in suit is invalid and void for the several reasons hereinbefore set forth at length.

CONCLUSION.

Therefore, the unanimous decision of the three judges of the Second Circuit, in the instant case, was amply justified by the new evidence presented to them, and should be sustained by this Court.

Respectfully submitted,

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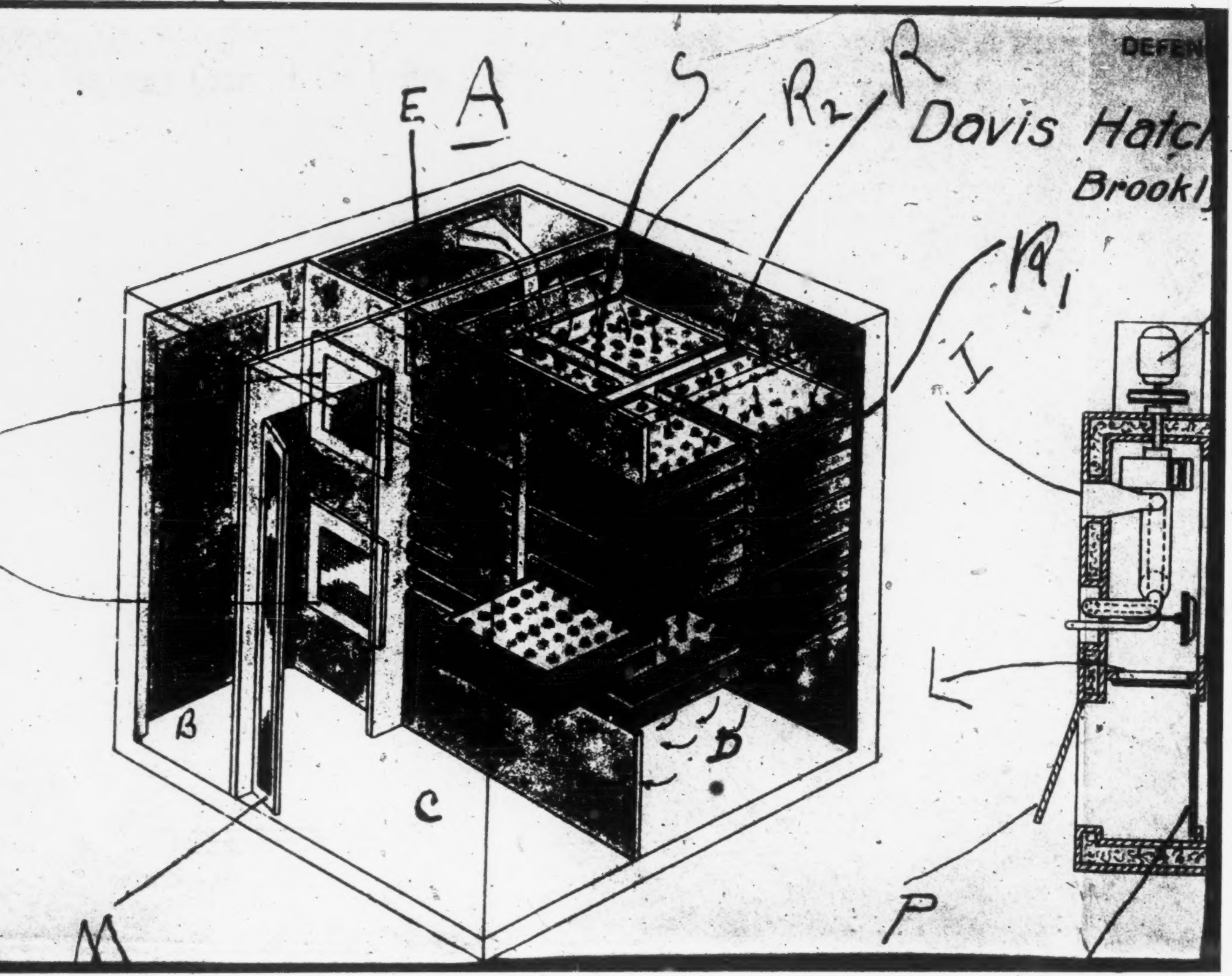
THOMAS G. HAIGHT,
FRANK E. PAIGE,
Counsel for Respondents.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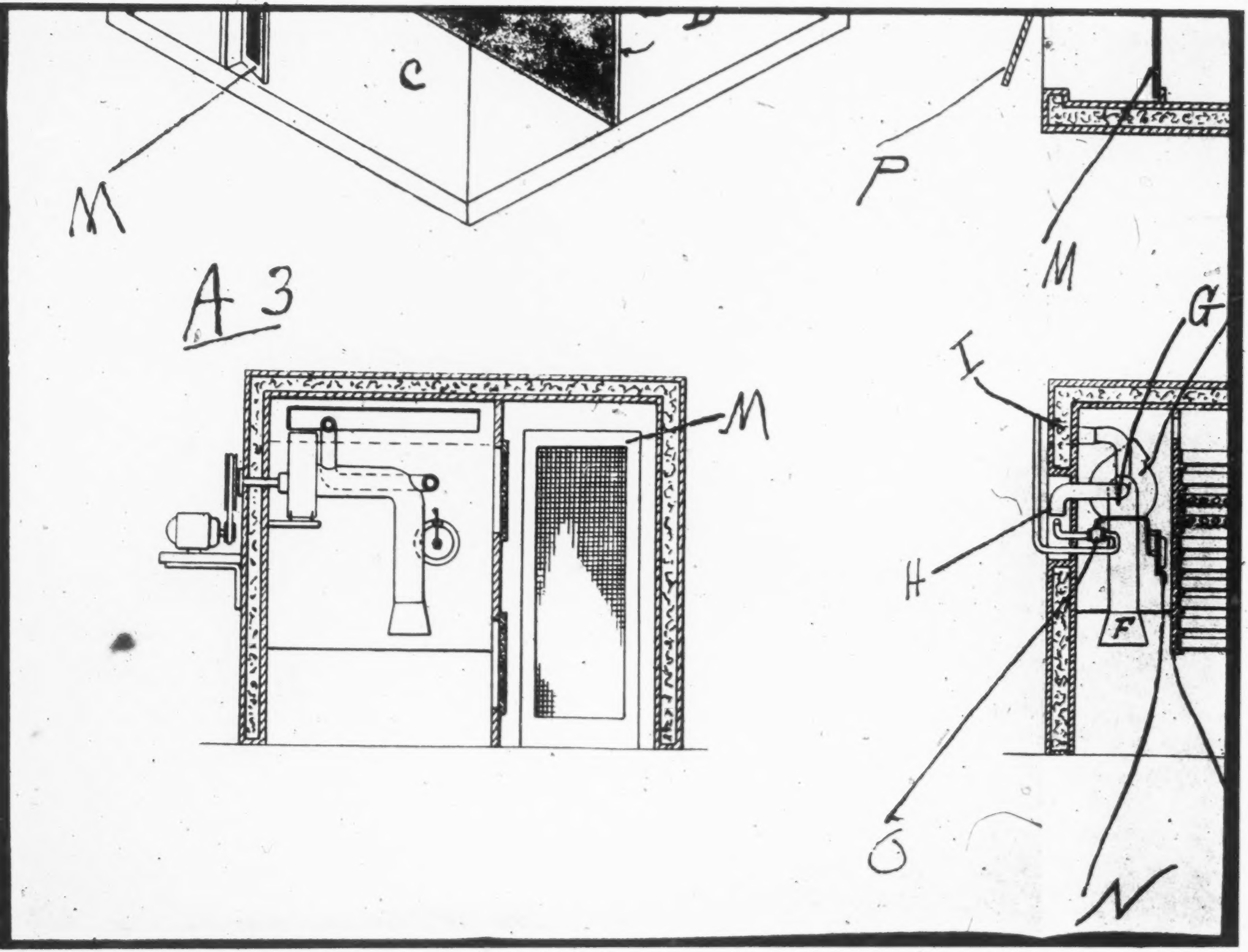
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DEFENDANT'S EXHIBIT D-D

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Davis Hatchery of 1910
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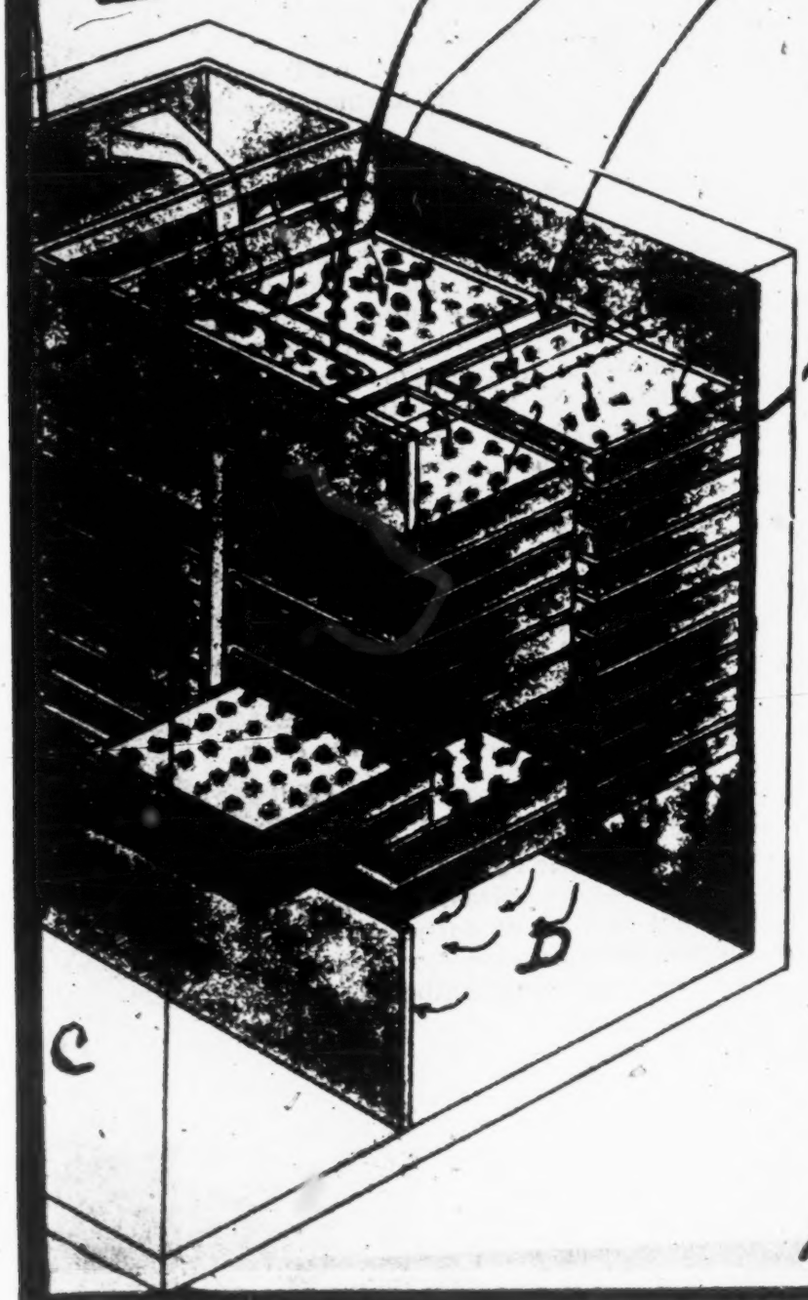

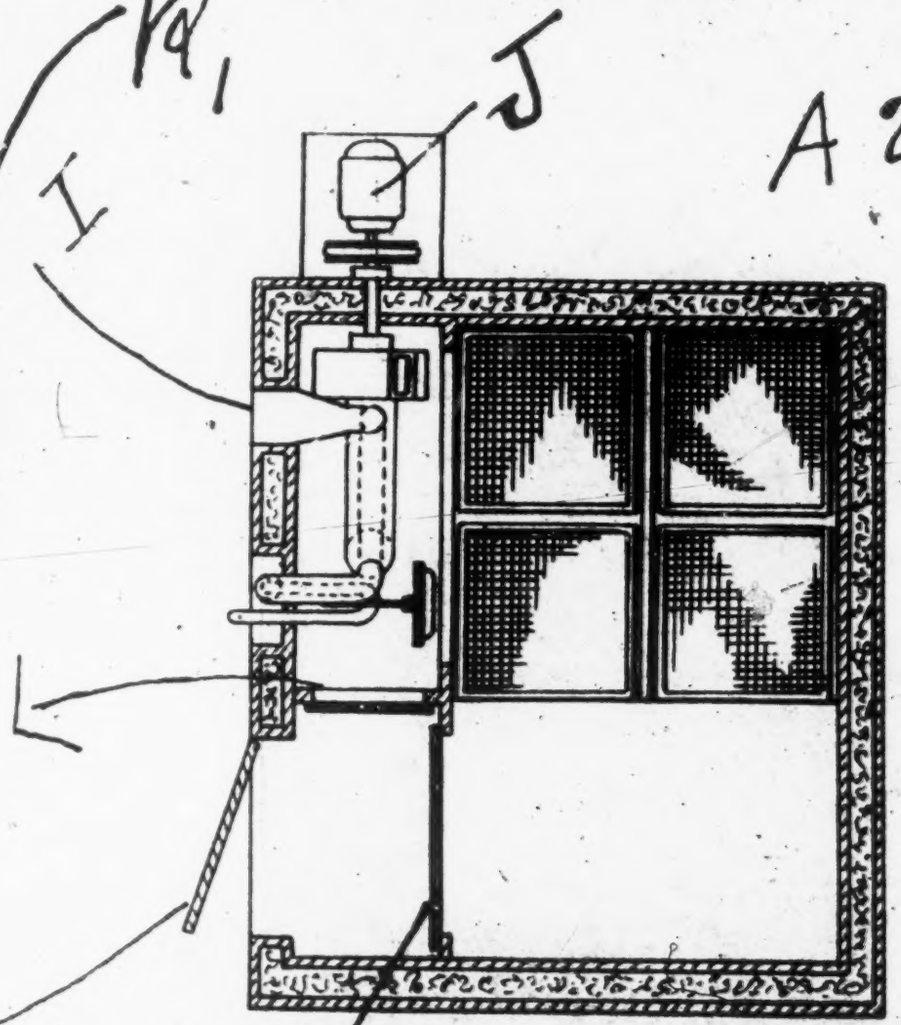

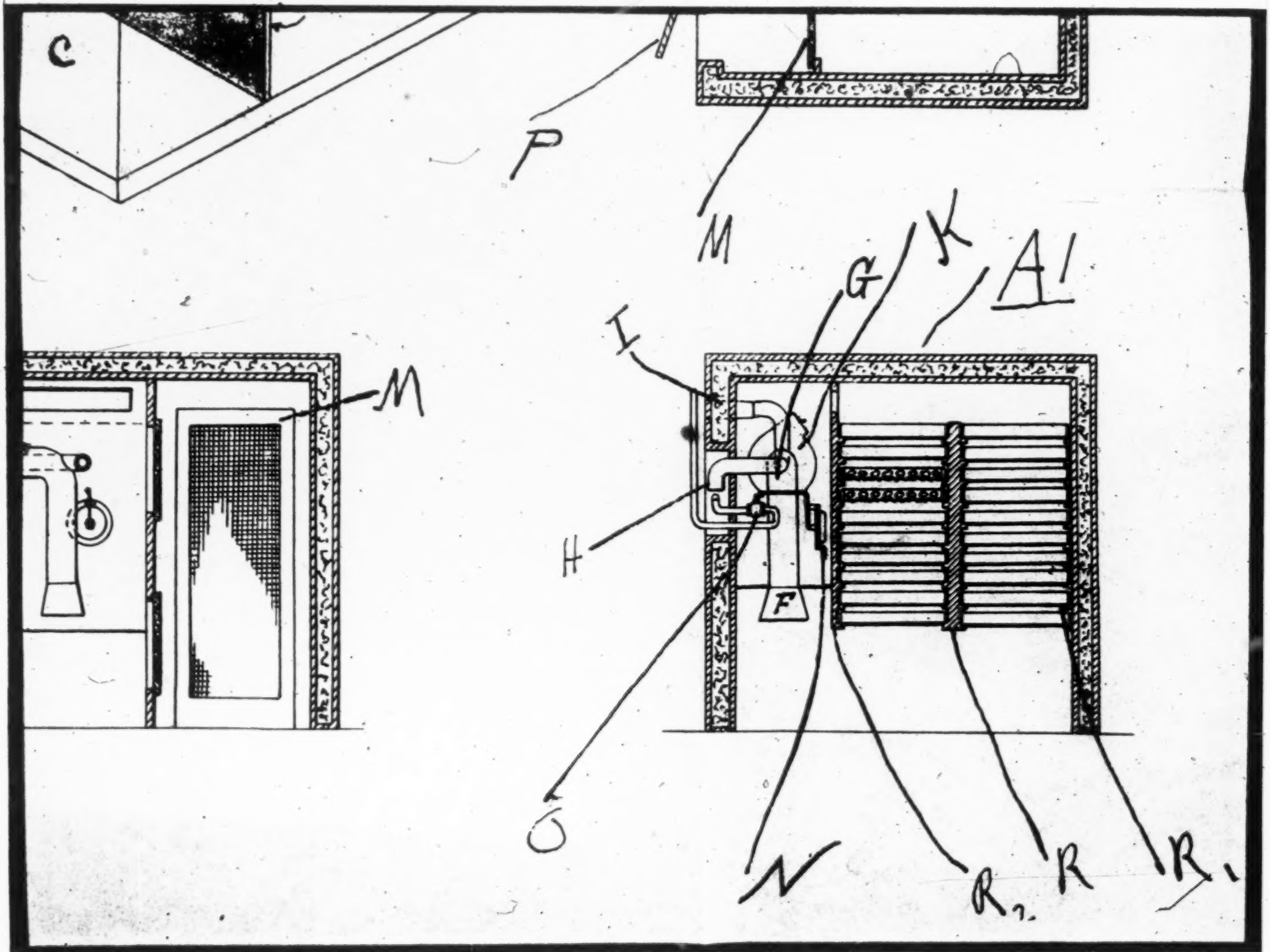
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Supreme Court of the United States

October Term, 1936

No. 35

SAMUEL B. SMITH,
Petitioner,

v.

A. B. HALL and L. C. HALL, d. b. a.,
HALL BROTHERS,
Respondents.

SUPPLEMENTAL BRIEF FOR RESPONDENTS ON REARGUMENT

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SUPPLEMENTAL BRIEF FOR RESPONDENTS ON REARGUMENT.

Preliminary Statement.

It is not the purpose of this brief to cover any of the matters *fully* covered in respondents' main brief, but only to deal with some subjects which were discussed at the first oral argument and which are either not covered, or are insufficiently covered, in the main brief. We will also here briefly discuss the recent decisions of the Supreme Court of Canada which invalidated the Smith Canadian patent on the Hastings defense. Subsequent to the drafting of the

first two points of this brief, we saw a preliminary draft of a supplemental brief which is to be filed in the *James* case (No. 36). In order to avoid duplication, we will rest some parts of our case on that brief with explanatory statements to show the applicability thereof to our case. We might readily omit the first two points of our brief and rest the subject matter thereof on the *James* brief. However, we have determined to incorporate those points in this brief, both because we treat the question a little differently than is done in the *James* brief and because we will thus have a brief complete within itself containing the preliminary points upon which subsequent points are in part rested.

In our main brief reference was made only to Section 4886 R. S. (U. S. C. Title 35, Sec. 31) as the basis for the Hastings defense. Section 4920 R. S. (U. S. C. Title 35, Sec. 69) is equally applicable, but reference to it was inadvertently omitted. That section specifies the defenses which may be made in a patent suit, the applicable ones being as follows:

> "Fourth. That he was not the original and first inventor or discoverer of any material and substantial part of the thing patented; or,
>
> "Fifth. That it had been in public use or on sale in this country for more than two years before his application for a patent, or had been abandoned to the public."

ARGUMENT.

I.

This Court gave the patent in suit a broader interpretation than had been given to it previously by any Circuit Court of Appeals which passed upon the Hastings defense.

In addition to the present case, the *James* case, and those which were before this Court in *Smith* v. *Snow* and *Smith* v. *Waxham*, 294 U. S. 1 and 20, respectively, the patent in suit has been before two other Circuit Courts of Appeals, *i.e.*, the Sixth Circuit in *Wolf* v. *Buckeye Incubator Co.*, 296 Fed. 680, and *Buckeye Incubator Co.* v. *Petersime*, 19 F. (2d) 721, and the Third Circuit in *Buckeye Incubator Co.* v. *Cooley*, 17 F. (2d) 453, and *Buckeye Incubator Co.* v. *Hillpot*, 24 F. (2d) 341. We may eliminate from further consideration, for the purposes of the point now under discussion, the two Circuit Court of Appeals decisions which this Court had under review in *Smith* v. *Snow* and *Smith* v. *Waxham, supra*, because in neither of them was the Hastings defense presented. Nor was that defense advanced in the *Petersime* and *Hillpot* cases, but the decisions in those cases are important as showing the construction placed upon the patent by the Sixth and Third Circuit Courts of Appeals, respectively. We shall discuss first the construction given to the patent in suit, in so far as it affects the Hastings defense, by the Sixth and Third Circuit Courts of Appeals in the cases above mentioned, and then the construction given to it by this Court in the *Snow* case.

(1) *The Sixth Circuit Cases:* In the *Wolf* case, the Circuit Court of Appeals merely adopted the opinion of Judge

WESTENHAVER in the District Court. His opinion is reported in 291 Fed. 253. Referring to the published articles and rejected patent application which *alone* were relied upon in that case to substantiate the Hastings prior use defense, Judge WESTENHAVER said (p. 258):

> "Something is said about driving the air from top to bottom by a centrifugal fan, but the position and location of the fan with respect to the eggs and the *direction* of the drafts *are not defined*, much less is any provision disclosed for driving the air currents *in a defined channel* • • •. All that can be said is that heated air is to be forced into a chamber filled with eggs, *permitted to go where it pleases*, and escape by some undescribed method of ventilation." •

Referring to the abandoned patent application, he said (p. 259):

> "No *well-defined channels* for the circulation of the air are provided."

In the previous part of his opinion, Judge WESTENHAVER, referring to the Smith patent, said (p. 255):

> "The principle of operation and the hatching method for which this apparatus is designed consist in forcing mechanically a draft of heated air *downwardly through the central corridor*, where *it passes below the bottom of the partition or curtains and ascends through the column of egg trays* to the exit at the top of the respective egg chambers.
>
> • • • • • • •
>
> "A cycle of forced circulation of air through *definite channels*, it is said, is thereby obtained.
>
> • • • • • • •

• Where italics are used in quotations, it will be understood that the emphasis is ours unless otherwise stated.

> "In actual operation it is claimed that a continuous forced current of suitably heated air is driven *downwardly through the central corridor and upwardly through the two egg chambers.*"

The claims which were thus made for the patent he, apparently, accepted.

It is thus clear that he and the Circuit Court of Appeals considered that the Smith patent called for the circulation of the air "through definite channels" and in a predetermined and uniform course, *i.e.*, downwardly through the central corridor to the floor and then up through the column of egg trays or chambers. This method of circulating the air neither he, nor they, found in any of the publications relied upon by the defendant in that case or in the Hastings abandoned application.*

That we are correct in our interpretation of the construction of the Smith patent, by these Courts, is apparent, we think, from the opinion in the *Petersime* case. In that case, Judge MOORMAN said (p. 722):†

> "Looking to the language of the claims, as indeed to the device that Smith uses, it would seem that he had in mind a process by which the warm air taken into the corridor would be *currently directed, so as to strike first the eggs in the more advanced incubation* * * *."

---

*There was no evidence in that case of the Hastings defense other than the publications and the abandoned application. Apparently not even the file wrapper of the application was before the Court.

†Judge DENISON sat both in the *Petersime* and *Wolf* cases.

Again, on the same page, referring to the Smith patent and the alleged infringing device, he said:

> "This conception of a current of air driven in a *definite* or *predetermined* direction is different, we think, from the Petersime process, by which diffusion of heat units and uniformity of temperature is obtained by the slow stirring or *agitation* of the air in the egg chamber."

Moreover, Judge WESTENHAVER's later decision in *Buckeye Incubator Co.* v. *Blum*, 17 F. (2d) 456 (where the Hastings defense was not involved) indicates what he meant in the *Wolf* case by his statement that the publications relied upon to establish the Hastings defense did not show that the currents of air were driven in "well defined channels". He held in the *Blum* case that the Smith patent was *not infringed* by a device where the air was *"agitated"* but not driven "in any uniform or ascertainable direction". Referring to the equalization of temperature in the device then before him and the effect of the air not moving in the manner just stated, he said (p. 459):

> "If adequate uniformity of temperature is obtained, it is accomplished only in this manner. In this sense and manner only can it be said that heat units are carried *from eggs in the advanced to eggs in a less advanced stage of incubation.* If claim 1 calls for a current of air forcibly created and driven against the eggs in any *definite* or *ascertainable* manner or *direction,* then defendant's device does not appropriate that step. It is not capable of creating or *directing* such a *current* or functioning in accordance with that principle."

His opinion shows clearly that he considered that there should be some means "for restricting more or less the channels through which it (the air) is driven" (p. 460). In

both this latter case and the *Petersime* case there was an open chamber *without partitions* (other than trays) which would *guide* the current of air.

(2) *The Third Circuit Cases:* The opinion of the Circuit Court of Appeals for the Third Circuit in the *Cooley* case makes it very clear that the Court considered that the Smith patent called for "establishing" a current of air "*regulated* in its *direction*" and so "*controlled*" that it passes first through the eggs at the bottom of the incubator upwardly or, as expressed in the opinion "first, through the old heat radiating eggs, and next, as it ascends, to the new heat absorbing eggs • • •". Referring to the *Hastings* device, Judge WOOLLEY said (p. 454):

> "Heated air is driven from the top downwardly against and around the eggs where, after circulating about them, it escapes through the chamber doors or other openings. • • • More important still, there was no arrangement for establishing and *regulating* currents of heated air and, similarly, no provision for obtaining uniformity of temperature other than that initially provided by the heating means. Moreover it should be noted that the heated air, like the wind, *would go where it listeth* and, accordingly, it *acted as it pleased.*"

Again, on page 455, he said:

> "Hastings and Smith, the patentee, no doubt saw the same incubating problems, but Smith pursued a solution *directly opposite* to that of Hastings."

The opinion then goes on to point out that Smith *regulated* and *controlled* the *direction* of his current of air first, *through the central corridor* to the bottom of the incubator, where it ascended through the heat radiating eggs to the heat absorbing eggs. The construction given to the Smith

patent in the *Cooley* case was commented upon by the Circuit Court of Appeals for the Second Circuit in the case at bar, where it was said that the Third Circuit found that the Hastings prior uses "were not of Smith's method because they did not *provide for a regular current of air*".

In the *Hillpot* case, it was held both by the District Court (22 F. (2d) 855) and by the Circuit Court of Appeals that the defendant did not infringe. In the District Court, Judge Bodine construed the opinion of the Circuit Court of Appeals in the *Cooley* case to hold (p. 857), as we have above construed it, that the patent disclosed and was limited to "air currents passing first through the eggs in advanced stages of incubation to those in less advanced stages of incubation". He found that this method was not practiced by the defendant, whose air currents went *upwardly* from the fans and *down* through the trays. The Circuit Court of Appeals, after pointing out that the infringement in the *Cooley* case was so clear that there was no occasion to construe the claims, stated that in that case and in the *Wolf* case it had been held that Smith had conceived a new method "whereby heated air, instead of being driven *hither and yon* throughout the closed chamber, is driven in currents and made to circulate in the form of columns of air in *predetermined* paths • • • " (p. 342). The Court did not, in that case, construe the Smith patent as being limited to directing the current of air first, to the eggs in the more advanced stages of incubation and then to those in the less advanced stages, but adhered to the view that the "essence of the invention • • • is *forced* circulation of heated air in *predetermined* direction • • • " (p. 344), brought about by a *corridor* between the tray tiers *partitioned from the latter by curtains* or, of course, the equivalent thereof. It was held that Hillpot did not infringe because he *omitted the curtains* or their equivalent covering the ends of the trays

adjacent to the openings or corridors between the trays tiers and the walls of the incubator, and corresponding to the central corridor of the apparatus shown and described in the Smith patent. The effect of this omission was stated to be (p. 345):

> "Instead of one strong current moving in *one direction* in *trunk* form, Hillpot has a trunk current only on leaving the fan; then it divides into a multitude of branches which follow *no defined courses* but only courses made by the least resistance."

The Hastings prior use was not asserted as a defense in the *Hillpot* case.

(3) *The Decisions of This Court*

(a) In the *Snow* case it was pointed out by this Court (p. 8) that infringement was sought to be avoided upon the ground that "claim 1 is restricted to an arrangement of the eggs in such order with respect to the *direction* of the propelled current of heated air that *it will first* come in contact with the more *advanced* eggs"; and "that the movement of air" in the accused device did "not result in 'a current of air' traveling in a *constant predestined* path • • •". This Court, while conceding that the specifications show an arrangement whereby the air would be first directed to the eggs in the more advanced stages, held that the patent was not so limited.

(b) After referring to the arrangement of eggs and the means of guiding the current of air shown in the specifications, it was said (p. 11):

> "But neither the arrangement nor the means of *guiding* the current of air are requisite to the application of the principle which Smith discovered and claimed.
>
> • • • • • • •

> "Claim 1 made no mention of curtains or any column of air or means of guiding the current of air, and the inventor made no claim for any particular arrangement of the eggs, except that they should be at different levels. Moreover, while the specifications and drawings show a particular arrangement of the eggs and a *particular direction* of the current, nowhere, in specifications or claim, is it stated either that the *direction* of the current is material or, what is the equivalent, that the order in which it reaches the eggs is material."

The same conclusion is stated on pages 13-14.

(c) In reference to the file wrapper and the changes which had been made in the various sets of claims presented to the Patent Office, this Court said (p. 15):

> "• • • none of these additions involve any particular order of arrangement of the eggs or any particular *direction or control* of the air current • • •,"

except that it is to be of sufficient velocity to circulate, maintain, and diffuse the air throughout the chamber at substantially the same temperature. See also page 16.

(d) In discussing the question of infringement, the Court said (p. 19):

> "Claim 1, as already stated, does not call for a current of air moving in any *particular direction.*"

(e) Referring to the infringing device and inferentially to what the patent requires in the way of air currents, this Court said (p. 19):

> "That there is a *mixture* of the air and *some confusion of its movement in the corridor,* and that at different levels within the space occupied by the tiers of trays the *movement is not in the same direction,*

> *is immaterial.* It is enough that there is a movement of air in current form following substantially defined paths *through the tiers of egg trays, sufficient to effect the desired transfer of heat units.* Claim 1 does not prescribe that a *current* of air is to be maintained *throughout* the chamber."

The Court then went on to hold that the respondents accomplished this result "by the currents of air set in motion either directly or indirectly by the movement of the blades of the propellers".

(f) In the *Waxham* case (p. 22) it was held that there was infringement, although there was no central corridor, the tiers of egg trays being placed in or near the center of the chamber, and there were no curtains or other means of guiding the air currents set in motion by the fans.

(g) As to what the specifications and claims contemplate, the Court said (p. 12):

> "The specifications and claim both contemplate a continuous circulation of the current of heated air through the chamber, which, *regardless of its direction,* would continuously operate, by repeated contacts with the eggs in all stages, to equalize the temperature throughout the chamber by carrying heat units from the warmer to the cooler eggs."

(4) *Summary:* It is apparent, we think, from the foregoing extracts from the opinions of this Court in the *Snow* and *Waxham* cases that a much broader and more liberal interpretation was given to the Smith patent by this Court than by the Circuit Court of Appeals for the Sixth and Third Circuits.

It is clear that the Circuit Courts of Appeals which considered the Hastings defense before this Court's de-

cisions in the *Snow* and *Waxham* cases rejected it* because they construed the patent to call for *regulated* or *controlled* currents of air moving in a *predetermined* and *well-defined* channel. In the *Wolf* case, no *specific* direction or path was specified. But the same Court later, in the *Petersime* case, held that the current was *first to go to the eggs in the more advanced stages of incubation.* This latter view clearly seems to have been that of the Circuit Court of Appeals for the Third Circuit in the *Cooley* case. But in the later *Hillpot* case, that Court did not so definitely limit the patent, but nevertheless adhered to the view that the current must be directed "in *predetermined* paths", and held that infringement was avoided by the *omission of curtains,* or their equivalent, covering the ends of the trays adjacent to the openings or corridors between the trays and the walls of the incubator, such openings corresponding to the central corridor of the Smith patent.

This Court, on the other hand, held not only that it was unnecessary, under the Smith patent, that the air should first reach the eggs in the more advanced stages of incubation, but the patent did not even require a central corridor or its equivalent, with curtains or similar means for guiding the air currents or, indeed, that there shall be any particular order or arrangement of the eggs or that the air should travel in a constant *predetermined* path or that it should be specifically *directed* or *controlled.* On the contrary, it was sufficient if there was a continuous circulation of a current of heated air which, *regardless of its direction,* would continuously operate, by repeated contacts with the eggs in all stages, to equalize the temperature throughout the chamber by carrying heat units from the warmer to the cooler eggs.

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* As will be presently shown, the defense was also rejected by the Sixth Circuit because it was not established.

II.

The Hastings defense was rejected by the Circuit Court of Appeals for the Third Circuit wholly, and by the Circuit Court of Appeals for the Sixth Circuit partly, because of the comparatively narrow interpretation which those courts gave to the patent in suit.

In the *Wolf* case, the Hastings defense was rested *entirely* upon "four newspaper articles and his rejected application for a patent". Hastings was not called, nor did any witness testify as to what he had done. It was said that none of the articles gave "any definite or specific description whereby one skilled in the art could reproduce the Hastings structure", and that it was not proven, nor could it be discovered from the articles, whether the hatcheries referred to in the articles were "a commercial and practical success" (pp. 257-258). There is nothing in Judge WESTENHAVER's opinion which would indicate that more of Hastings' file wrapper than the abandoned application was before him.*

But it is also perfectly clear, we think, from his opinion, that he and the Circuit Court of Appeals relied not only upon the *insufficiency* of proof of the Hastings prior use, but upon the further fact that neither the publications nor the abandoned application exhibited "*well-defined channels* for the circulation of the air", a feature considered by them to be an essential part of the Smith patent, and in the

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* The Circuit Court of Appeals for the Second Circuit, and respondents in their main brief, rely also upon the statements in the *subsequent* proceedings in the patent office. The application was prepared by Hastings himself when a young man about 27 years of age.

Petersime case interpreted to mean that the current be so directed "as to strike first the eggs in the more advanced incubation".

In the *Cooley* case, the *sufficiency* of the proofs to establish a prior use by Hastings, as distinguished from the details of the use, was not questioned by the Circuit Court of Appeals, but the defense was rejected on the *sole* ground that Hastings had no means for *regulating* and *directing* the currents of air in the manner taught by the Smith patent. The District Judge said that in "the present day description of this hatchery and the drawings now made, a complete anticipation is indicated" (p. 2 of Appendix to Petr's. Brief). These remarks related to the incubator at the Davis farm. Judge BODINE did not discuss the Muskogee incubator other than to state that it was "a complete financial failure". As shown in the brief for respondents in the *James* case (pp. 7-10; 29-54), any deficiency of details as to the Muskogee incubator which existed in the *Cooley* case was supplied quite overwhelmingly in the *James* case. As previously stated, the Circuit Court of Appeals in that case pointed out that while Hastings and Smith doubtless saw the same incubating problems, "Smith pursued a solution *directly opposite* to that of Hastings" (p. 445); the former regulating and controlling the direction of the current of air and the latter failing to do so, the air in his apparatus going "where it listeth" and acting "as it pleased". As previously pointed out, in that case the Court held that Smith attained "uniformity of temperature" by directing current "first, through the old heat radiating eggs, and next, as it ascends, to the newer heat absorbing eggs".

III.

The decision of the Court below invalidating the patent in suit on the Hastings defense was unavoidable in the light of this Court's interpretation of the patent.

It is not our purpose to discuss this point in any detail in this brief. The evidence to support the Hastings defense is referred to at length in our main brief (pp. 7-21) and in the original brief of respondents in the *James* case (Point I, pp. 12, *et seq.*). The opinion of the Circuit Court of Appeals likewise summarizes the evidence, particularly the documentary part thereof, quite fully.*

In our original brief the evidence relating to the Hastings defense was considered with reference to claim 1 of the patent (the only claim in suit). It is our purpose here to briefly discuss the evidence with reference to this Court's interpretation of that claim.

If we are correct in our understanding of this Court's opinions in the *Snow* and *Waxham* cases that the Smith patent does not require that there shall be any particular order or arrangement of the eggs or that the propelled current of air should reach the eggs in any particular order, or that it should be guided, controlled or directed by any particular means or in any particular manner, but merely that there shall be a continuous circulation of the heated air through the chamber, which, *regardless of its direction,* would continuously operate, and at sufficient velocity, by repeated contacts with the eggs in all stages, to equalize the temperature throughout the chamber, then, we submit that it inevitably follows that the Hastings defense invalidates the patent.

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* R. pp. 238, *et seq.*

Hastings' first publication in "The Dollar Hen"* shows that as early as 1909 he conceived, and in the article taught, *staged incubation*, and "the use of a steady current of air" forced into the incubator by a motor driven fan or blower, "the rate of movement of which (air) may be *varied at will*" but "always"—sufficiently *brisk*, however, "to prevent an unevenness of temperature in different parts of the room". Here is a complete exposition of the invention covered by claim 1 of the Smith patent as construed by this Court. "The Dollar Hen" standing alone as a publication, we submit, should invalidate the Smith patent under Section 4886 R. S. (U. S. C. Title 35, Sec. 31.)

Moreover, it shows that Hastings was the prior inventor within the meaning of Sec. 4920 R. S. because the article shows the conception and the communication of the invention to others prior to Smith, and the Davis and Muskogee incubators show that the same was reduced to practice before Smith. See *Milburn Co.* v. *Davis-Bournonville Co.*, 270 U. S. 390.

Hastings' patent application, coupled with the arguments and briefs submitted in connection therewith,† show conclusively that in 1911-1912 he had conceived, and reduced to practice, constructively at least, every element which this Court has found constitutes claim 1 of the Smith patent.‡ As will be presently shown, his reduction to practice

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* Quoted on page 15 of original brief for respondents in the *James* case.

† Deft.'s Exh. F, p. 246, Hall Record.

‡ An excellent comparison of the elements of the Smith claims and the corresponding features of the Hastings prior use will be found in the opinion of the Supreme Court of Canada which invalidated the Smith patent. As will be presently pointed out, a copy of this opinion appears under separate cover, which will be submitted as an appendix to this brief.

was also actual in those years. Even in the original application, which as before stated, was drawn by Hastings, he states that he secured "a more *uniform temperature* throughout the hatching chamber by substituting a *forced draft* for gravity drafts", and ventilation "through cracks around the door of the heating chamber or other small openings in any part of the air circuit".* The arguments addressed to the Patent Office are replete with references to staged incubation; forced and "rapid" circulation of heated air; the maintenance of *uniform* heat, the *even distribution* of heat, continuous circulation of a current of air; the introduction and regulation of moisture; the carrying of air from the warmer to the cooler eggs, and the equalization of temperature throughout the chamber.†

There is no more reason for supposing that the fan or blower in the Hastings device would not produce currents of air "without substantial variations of path" than this Court said in the *Snow* case would be the expected result of "a fan operating • • • within a closed chamber under substantially constant conditions". This Court said in the *Snow* case that the condition just referred to would be expected to follow "if it be assumed, without deciding", that the Smith patent called for "a current of air so constant in its movement and direction as not to depart substantially from a well-defined path" (pp. 19-20). The currents of air in the Hastings device were set in motion "by the movement of the blades of the propellers", which this Court in the *Snow* case said was done by the device held to infringe in that case and that such a "method is that of Smith" (p. 20).

The testimony of Mr. Hastings, which Judge HINCKS, (who saw and heard him on the witness stand) in the Dis-

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* R. 250-251.

† R. pp. 261-277.

trict Court referred to as "candid",* and the testimony of Mr. and Mrs. Davis, show quite conclusively that Hastings practiced successfully for commercial purposes, at the Davis poultry farm in Brooklyn from March until May, 1911, the Hastings method of incubation described in the abandoned application and the file wrapper thereof, and that thereafter Davis alone practiced it until 1913 when, owing to financial reverses, he was compelled to abandon his farm. The Hastings incubator, which had been built in the cellar, was too large to be removed without taking it apart and it was accordingly dismantled.† We will not discuss in detail the testimony of these witnesses in this brief because it is quite short, all of it being found from pages 50 to 64 of the record. It is also discussed in our main brief and in the James brief on reargument. Their testimony is fully corroborated by the letter written on May 20, 1911, a copy of which was incorporated in a publication which Hastings put out after he left the Davis farm and which is referred to in petitioner's cross examination of Hastings at page 55 of the record. This letter is quoted in full on pages 23-24 of our main brief, and is part of Plaintiff's Exhibit 1 in the *James* case.

It was urged at the previous argument and in petitioner's brief that Hastings did not force his air into his incubator with sufficient speed. This point is fully answered in Point VI of "Respondents' Brief on Reargument" in the *James* case. What is there said is applicable to the present case. Moreover, Hastings' patent application and file wrapper show that he contemplated the use of "a *rapid* circulation of air through the whole collection of eggs in the chamber and past the heater" and that "the con-

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* R. p. 218.

†R. p. 61.

ditions" should be "maintained uniform".* In his earlier "The Dollar Hen" article he pointed out that the air must be sufficiently *brisk* "to prevent an unevenness of temperature in different parts" of the incubator and that it might be "varied at will".

There is no conceivable reason why, when Hastings came to build and operate incubators, he should have departed, so far as the velocity of the air is concerned, from what he clearly showed in his representations to the Patent Office and the last mentioned publication was his conception, namely, that the air currents in the incubator should be sufficiently brisk or rapid to accomplish what this Court said was an essential of the Smith invention "to equalize the temperature throughout the chamber". In addition, the evidence indubitably establishes that eggs were hatched in staged incubation and in large numbers, both numerically and on a percentage basis, at both the Davis farm and at Muskogee. This could not have happened had the air not been driven at sufficient velocity to equalize the temperature.

In the brief filed on behalf of Hastings before the Board of Examiners-in-Chief in the Patent Office, there is quoted a statement by Hastings in which appears the following: †

> "In the practical plant the *entire* volume of air passes *through the fan* every thirty seconds."

This, of course, is a very rapid movement. It is not inconsistent with what is said immediately following in the same statement that the air is blown "past each and every egg at the rate of 30 feet per minute". In Petitioner's Exhibit 11-A in the *James* case (reproduced opposite p. 25 of the *James* brief on reargument) the air is shown as leaving the

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* R. p. 273.
† R. p. 275.

fan at the rate of from 400 to 500 feet per minute, yet is passing the eggs in many places at the rate of only 40 feet per minute.

Hastings did not abandon his idea when he left the Davis poultry farm, but went on to Muskogee, Oklahoma, where he built and operated successfully a considerably larger incubator. Indeed, when Hastings left the Davis farm he prepared a booklet which he published with the idea, as he expressed it, that he "was going to capitalize on this idea of mine".* This booklet (introduced as Exs. D-C in the Cooley record) is part of Plaintiff's Exhibit 1 in the *James* case. (See James record at pp. 581 and 1294.) Hastings was employed by Davis simply to build an incubator and to operate it, apparently, for a time. He was paid by Davis for building the machine and for operating it. It was understood at the time that Hastings was thus engaged that Davis was to have the right to operate the device and thus to use the Hastings method.† As pointed out in the original brief in the *James* case (p. 41) the Muskogee incubator was not financially successful because an attempt was made to do custom hatching for those who supplied eggs to the hatchery at what turned out to be the commercially impossible price of 1¢ an egg. But the operation of the incubator itself was successful.

It is difficult to see how, in view of the decision of this Court in *Corona Cord Tire Co.* v. *Dovan Chemical Corp.*, 276 U. S. 358, the Circuit Court of Appeals could have reached any different conclusion than it did. The uses of the Hastings incubator at the Davis poultry farm in Brooklyn and at Muskogee, Oklahoma, were certainly successful, *beyond* the extent required in the *Corona* case.

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* R. p. 55.

† R. pp. 52, 57 and 59.

As will be shown under the next point, the Supreme Court of Canada has recently expressed the view which we have advanced under this point.

IV.

The Supreme Court of Canada has recently invalidated the Smith Canadian patent, which is exactly the same as the patent in suit here, on the Hastings prior use and invention.

When this case was originally before this Court, petitioner filed an appendix to its original brief, consisting, among others, of a copy of an opinion of the Exchequer Court of Canada in a suit which had been instituted by the Attorney General of Canada to impeach the Smith Canadian patent No. 217,777 issued in 1922 (*The King* v. *The Smith Incubator Company, et al.*). *This patent is exactly the same as the patent in suit here.* The principal basis of the attack was the Hastings publications, prior use and inventorship. Without referring to the interpretation given by this Court to the Smith patent, the Court rejected the Hastings defense, and apparently adopted as his reasons therefor those advanced by the Third Circuit Court of Appeals in the *Cooley* case. He added, however, that he had come to his conclusion "not unhesitatingly". On the same date that the opinion in the case just referred to was handed down, the same judge in an infringement suit brought by the Smith Incubator Company against one Seiling declined to follow this Court's interpretation of the Smith patent and gave to it the narrow construction which the Circuit Court of Appeals for the Third Circuit had given to it in the *Cooley* case. After stating how he felt that the claim must be construed, Judge Angers said:

> "With all due respect I must say that I am unable to accept the view expressed by the Supreme Court of the United States in the case of Smith v. Snow (1). The extremely *broad interpretation* given to claim 1 of the Smith patent in the said case is not in accord with the principle laid down in re Western Electric Company Inc. c. Baldwin International Radio of Canada (ubi supra) and the decisions therein cited".

There was an appeal in both cases to the Supreme Court of Canada, and in each the patent was held invalid on the Hastings prior use and invention.

In the case *attacking the validity* (*The King* v. *Smith Incubator Company*) of the patent, the Supreme Court agreed with the construction of the patent given to it by *this Court* and then went on to say that that conclusion

> " . . . is, in our view, decisive in respect to the main ground upon which the learned trial judge based the validity of the respondents' patent; for what was said of Claim 1 by the United States Supreme Court is also true of the other claims; and it follows that, having regard to Milo Hastings' operations and prior public use in Muskogee, as established in the present case, Smith's claims in the patent in suit are obviously too wide.
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> . . . . . .
>
> "Indeed, and more particularly in view of the opinion delivered by Mr. Justice Stone on behalf of the Court, we are led to believe that had the prior public use of the patented method and knowledge thereof by Milo Hastings been adduced in evidence in the Snow case, the result would have been different".

The Court then commented upon the decision of the Circuit Court of Appeals for the Second Circuit in the case at bar, approved of the same, and said:

> "What was said of the situation in the United States in the latter judgment equally applies to Canada as the law stood at the time when the disputed patent was issued".

In the *Seiling* case, the Supreme Court followed the conclusion which it had reached in *The King* v. *Smith Incubator Company, et al.*, regarding the validity of the Smith patent. For the convenience of the Court we have printed under separate cover, as an appendix to this brief, a copy of the opinions of Mr. Justice RIDDELL in the cases just referred to. We will have a certified copy of the Canadian patent at the argument, which will be left with the Court if the Court wishes it. Claim 1 of the Canadian patent is quoted in the opinion in the suit to invalidate the patent. Comparison will show that it is word-for-word the same as claim 1 of the patent in suit.

V.

Petitioner's position in reference to the Hastings defense precludes a finding that the respondents' practice since 1930 or 1931 * infringes the Smith patent.

In support of this proposition, we will rely in addition to our main brief, upon Points IV, V, VI and VII of "Re-

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* There is some confusion in the printed record as to whether respondents adopted the separate hatching method *exclusively*, in the fall of 1930 or 1931. In the printed record, at page 64, Mr. Hall is reported to have testified that this took place in the fall of 1930. Yet, in another part of the record, the same witness states that respondents adopted separate hatching exclusively, about September, 1931, and started using it as part of their practice in January, 1931.

spondents' Brief on Reargument'' in the *James* case. What is there said is equally applicable to the *Hall* case.

The great advantages of separate hatching are pointed out at pages 64 and 71 of the *Hall* record. These advantages are developed more fully in the *James* record.

Conclusion.

It is respectfully submitted that the decree of the Court below should be affirmed.

Respectfully submitted,

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FILED
APR 3 1937
CHARLES ELMORE CROPLEY
CLERK

Supreme Court of the United States

October Term, 1936

Nos. 35 and 36

SAMUEL B. SMITH, *Petitioner*,

vs.

A. B. HALL and L. C. HALL, d. b. a. HALL BROTHERS,
Respondents,

SAMUEL B. SMITH, *Petitioner*,

vs.

JAMES MANUFACTURING COMPANY and ELMIRA HATCHERIES, INCORPORATED,
Respondents.

OPINIONS OF THE SUPREME COURT OF CANADA INVALIDATING SMITH CANADIAN PATENT ON HASTINGS DEFENSE

THOMAS G. HAIGHT,
ARTHUR E. PAIGE,
FRANK E. PAIGE,
Counsel for Respondents Hall Brothers.

H. A. TOULMIN, JR.,
Counsel for Respondents James Manufacturing Company, et al.

THE KING *v.* THE SMITH INCUBATOR CO. and THE BUCKEYE INCUBATOR CO.	We concur: "L. P. Duff" "H. H. Davis" "P. Kerwin" "A. B. Hudson"

Coram: The Chief Justice, RINFRET, DAVIS, KERWIN and HUDSON *JJ.*

RINFRET, *J.* The Canadian letters patent No. 217,777 issued to Samuel B. Smith on the 18th day of April, 1922, for alleged new and useful improvements in incubators are impeached by the Attorney General of Canada who alleges that the respondents, respectively owner and licensee thereunder, in attempting to enforce their alleged rights granted by the said letters patent, are seriously and detrimentally affecting the welfare of the Canadian poultry industry. The Attorney General is acting under s. 60 of the Patent Act, 1935 (25-26 Geo. V, chap. 32).

The information prays that the letters patent be declared invalid and void and that the same be cancelled and set aside.

In the Exchequer Court, the patent was held valid; and the Attorney General appeals from that judgment.

Several grounds of impeachment set out in the particulars of objection filed with the information were abandoned at the trial. In this Court, the grounds upon which the patent was sought to be impeached were:

> (a) That there was no invention, having regard to the prior art and to the prior knowledge and use of a similar device in the year 1912 by one Milo Hastings, at Muskogee, Oklahoma, U. S. A.;

(b) That the claims of the patent embrace more than the applicant invented, if he invented anything.

The apparatus and method disclosed in the specification is there stated to be

> particularly designed for extensive operations wherein a chamber of large dimensions is adapted to contain thousands of eggs in separate trays arranged in tiers and the method of heating is such that the heated air is adapted to the eggs in various stages of incubation. There is forced circulation of hot air through the chamber which is adapted preferably to maintain all eggs at temperatures between 100° and 105° Fahrenheit approximately and this improved system contemplates that fresh eggs will be placed in a horizontal plane, preferably by means of trays supported in horizontal planes, and after the eggs have been subject to the circulation of hot air for a predetermined time (the air circulating largely around the eggs) they will be placed in a tilted or inclined position in a different location but still subject to the same column of air and at this period of incubation they will be tilted in different planes at regular intervals during the time they remain in this latter position, and after they have remained for a predetermined time they will be again moved to a different position with reference to the forced circulation of hot air and so placed therein that the air will tend to keep the eggs below 105° temperature, and in this last named position the air will in effect act as a cooling medium for the eggs. The temperature of circulating air should be such as will prevent the eggs in the early stage of incubation from falling

> below 100° and the speed of velocity of the circulating air should be such as to carry the heat away from the eggs in the later stage of incubation and thereby hold the temperature of those eggs at 105° or slightly below that. It is manifest that the temperature will remain practically the same throughout the column of the eggs, but the air is impelled with sufficient velocity to carry the heat away from the eggs which happen to be in the advanced stage of incubation.

A detailed description of the apparatus and of its method of work is then given by reference to the figures and numbers on the accompanying drawings.

The "forced circulation of hot air through the chamber" is provided by means of fans, or series of fans of which it is said that they

> can be so arranged and can be operated at such speed as to cause the hot air to circulate fast enough to keep the temperature throughout the chamber between the limits of 100° and 105°.

The specification then goes on:

> It, therefore, appears that the improved apparatus and method contemplates the application of hot air circulating in a column with such speed as to keep the temperature substantially uniform and so arranging the eggs that the fresh eggs are placed at one point in the column of air and held in a horizontal plane until they reach a predetermined stage of incubation and then put at a different point in the same column of air and kept in planes inclined to the horizontal and thereafter placed at such a point in the column of air that the forced draft of air

acts to hold the eggs at a uniform temperature and to prevent them from becoming overheated and thereafter placing the eggs into final position for the hatching operation.

The specification further provides that

> "Any suitable thermostatic means may be employed for regulating the temperature such for instance as a thermostat commonly employed in incubators of a well known construction" etc.

There are five claims. Claims 1, 2 and 3 relate to "the method of hatching". Claims 4 and 5 relate to the apparatus. Claim 1 is typical of the three claims relating to the method; and, for our purposes, it will be sufficient to set it out in full:

> The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a current of heated air, said current being created by means other than variations of temperature and of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified.

Whatever difference may exist between this claim and claims 2 and 3 is not material and may be pointed out as we proceed.

The claims relating to the apparatus read as follows:

> 4. In an incubator, a closed chamber having a central corridor provided with an air-distributing space in its upper portion and a power-driven fan in said space, curtains at each side of said corridor, arranged to permit the air to circulate from the bottom of the chamber into the part of the chamber behind the curtains, passageways connecting the air distributing space with the corridor and the part of said chamber behind the curtains, separate stationary and tilting racks behind said curtains, egg trays having open-mesh bottoms removably mounted upon said racks, and means to heat the air circulated through said chamber.
>
> 5. In an incubator, a closed chamber with a vertically disposed partition to provide a corridor having upper and lower passage-ways to said chamber, egg trays arranged at different levels in said chamber, a power driven fan creating a current in said corridor to circulate through said passage ways and egg trays, said chamber having restricted openings of sufficient capacity for the discharge of foul air without undue loss of moisture and means to heat the air circulated through said chamber.

Evidence, including several prior patents and publications, was adduced for the purpose of establishing prior knowledge and the advance of the art up to the date of Smith's alleged invention which, by mutual consent, was agreed as carrying back to the year 1915.

Now, it was in the Fall of 1911 and the Winter of 1912 that Milo Hastings installed and organized a large hatchery at Muskogee, Oklahoma.

Mr. Hastings was here as a witness in the present case. He said he had become "interested in incubation" as early as the year 1896. After graduating from college, he was employed as a poultry man by the United States Department of Agriculture. He was called upon to investigate the cold storage industry of eggs and chickens; and thus he became acquainted of the fact that for the successful storage of eggs and chickens it was necessary to have the control of humidity, as well as of temperature, in cold storage chambers. When working upon the cold storage industry, he noticed the use of fan circulation of air in a chamber to equalize heat and also to control humidity. It occurred to his mind that the essential problem of incubation upon a large scale involved the same series of natural conditions and natural laws, the circulation of air, the equal distribution of heat and humidity; and that if, by means of a fan, he could equalize the temperature of eggs when holding them cold, the same thing could be done for an incubator with the same large room structure and superimposed trays. He developed that conception while working for the Department of Agriculture as a poultry expert during the year 1908. He described in a rough and general way what he considered his invention in a book entitled "THE DOLLAR HEN", which was copyrighted in the year 1909. In the early winter months of 1911, he built an incubator along the lines of his conception for Mr. Walter D. Davis, of Brooklyn, and he operated it during the hatching season, in the Spring of 1911. The total capacity of this incubator was 6,000 eggs. In this incubator, he used a fan for the circulation of air.

This first attempt of Mr. Hastings to reduce his conception to practice need not however be developed, as it is not relied on by the Attorney General. We may pass at once to the Muskogee plant, in respect to which alone after

prior user is alleged as defeating the validity of the respondents' patent.

The room-sized incubator at Muskogee was erected, as already mentioned, in the late Fall of 1911 and the early Winter of 1912. It was operated by Hastings during the hatching season of 1912. The construction of that hatchery was explained in detail by Hastings. He filed three diagrammatic drawings of the incubator which he built and operated. They show a series of seven incubating chambers all contained in a single room. At one side of the chambers is a corridor into which they open and from which the eggs enter, the chickens are taken out, etc. A panel door is set up, not hinged but buttoned, in front of each hatching chamber when the operator is not working it. An entry way leads into the corridor from which the chambers are worked. A fan or blower is provided for air circulation through a passageway over the incubating chambers leading to the chamber where the heater is located. The air rising through this chamber, impelled by the pressure from the fan or blower, goes into another large opening at the top of the seven incubating chambers, the air is driven by the impulsion of the blower or fan down through the incubating chambers into a passageway which is merely an opening along the floor. The air is then drawn by suction to the fan or blower from which the circuit is repeated indefinitely. The hatching or incubating chambers are made to contain screen bottom trays with special millwork slides. In each chamber there is room for twenty trays; each tray has a capacity of 250 eggs; which gives 5,000 egg capacity for the chamber, or 35,000 capacity for the whole plant of seven chambers.

Although seven incubating chambers are shown, it was one hatching operation all carried on in the same room.

Hastings testified that the diagrams produced by him correctly showed the hatchery actually in use and operated by him at Muskogee. Ventilation, he stated,

> was definitely assured by the fact that the heater has a gas flame burning in the bottom of a vertical pipe; and to support its combustion it has to draw and consume a steady stream of air.

He made provision for controlling the moisture; and

> the eggs were turned as the art required; in this case, they were turned by hand.

Hastings admits he did not distribute the eggs in any particular way; but, being skilled in the art of incubation and being aware of the fact that the eggs, in the early stages of incubation, absorb heat (or they are endothermic), while, in the later stages, they generate heat (or they are exothermic), he knew that the heat or the temperature of the eggs was "a factor of conductivity from the circulating air". He declares positively that

> observing that he would naturally place his eggs as they were in the various stages so that he did not have too many eggs in the latter stages of incubation in one general mass.

In his own words: his

> fundamental invention had been to equalize the air in a large hatchery by the forced draft or fan system of circulating the air.

He explains the conception of his invention was "to equalize the temperature in a large room" through the means adopted and used by him.

Hastings hatchery was open to the public. It was extensively advertised; and there was no attempt to keep secret any detail of construction or operation.

Of course, it must be admitted that Hastings' enterprise did not meet with financial success. He attributed that to two particular factors; the low cost at which the hatching was done; and the incidental expense of a new and untried venture.

Be that as it may, commercial success may be due to many factors. The reasons given by Hastings for the failure in the present case seem plausible; and the evidence here

> "cannot afford a basis for refusing to give effect to the conclusion necessitated by the facts". (Guettler v. Canadian International Paper Company, 1928 S. C. R. 438).

As observed by Parker, J., in Robertson v. Purdey (24 R. P. C. 273, at p. 299):

> If I am satisfied that the evidence of prior user is trustworthy evidence, I am not at liberty to disregard it merely because the prior user was not attended with any commercial success, more especially if the want of such success can be otherwise explained.

In this case, we have no reason to decide that Hastings' evidence was not trustworthy. We are not unaware of the principle that evidence of prior user should be subjected to the closest scrutiny and that it should not be accepted without the greatest caution. But Hastings' description of his apparatus and his story of his method of operation is corroborated by the witness Norman Hickox, who visited the

Muskogee hatchery at the time it was in use, took photographs of it, and wrote an article about it early in 1912. The photographs and a photostatic copy of the article are filed in the case. It is reasonably evident from the description contained in that article that Hastings' conception, in the form testified to by him at the trial, was reduced to practice, as he outlined it, in the Fall of 1911; and that his operations at Muskogee carried out the idea of forced circulation of air and of staged incubation.

To our mind, this is definitely supported by the language used in the brief on the appeal to the Examiners in Chief, when Hastings' application for a patent was filed on May 3rd, 1911, in the United States Patent Office. The conception claimed by Hastings in the course of his evidence was implicitly disclosed in the specification written by himself to accompany his original application (dated April 20th, 1911). It is expressly stated in the brief to the Board of Examiners in Chief on appeal (December 20th, 1912), where Hastings developed his ideas; and, among other, used the following language:

> The problem has been to enable the incubating operations to be carried on continuously, if so desired, with eggs at all stages of development, and with all of a vast number of eggs subjected to the same temperature and atmospheric conditions best adapted for the development of the embryo. An incubator such as is contemplated is in sharp contrast to the ordinary incubator in that it is designed to handle simultaneously hundreds of thousands of eggs and, therefore, requires a relatively large chamber for accommodating them.

The documentary evidence in the record—evidence writings and publications contemporaneous with Hastings' user—constitutes the most satisfactory corroboration of Hastings' testimony in this respect. In fact, it was believed by the trial judge and it was accepted by him. His judgment proceeds on the assumption that Hastings' evidence is true; and he found the Smith patent valid only because, in the view he took of the situation, there was some slight difference between Smith's conception and Hastings' conception. This difference the learned judge described as consisting

> "in the manner in which the air is driven and circulated through the egg chambers in the Smith's incubator" and "to a lesser degree, in the arrangement of the tilting racks whereby the eggs may be turned conveniently and with a considerable saving of time and labor".

But, of course, the subject-matter of Smith's alleged invention and the validity in that respect of the patent in suit must of necessity be envisaged within the ambit of the claims accompanying the specification.

There are, as we have pointed out, what may be called the method claims and the apparatus claims. Of the former, claim No. 1 has already been set out. There is no material difference between it and the other two method claims. The only change consists in substituting a slightly differently worded definition of the "current of heated air". In claim No. 1, the phraseology runs thus:

> applying a current of heated air, said current being created by means other than variations of temperature.

In No. 2:

> applying a power driven current of heated air in an adjacent chamber through openings into the egg chamber.

In No. 3:

> applying a vertically directed current of heated air in an adjacent chamber to circulate in said egg chamber through upper and lower openings between said chambers.

Otherwise, the three claims are verbatim the same.

Now, as observed in the judgment appealed from,

> "the principle of air circulation in a room to maintain uniformity of temperature is not new".

The invention, if any, cannot consist in the adoption of this principle. In order to reveal the exercise of the inventive faculties and thereby to bear the character of an invention in the patentable sense (Crosley Radio Corporation v. Canadian General Electric Company, 1936 S. C. R. 551, at p. 556), it would not be sufficient for Smith's conception to consist in the adoption of the principle of air circulation in a room for the purpose of maintaining in it uniformity of temperature. It would require a further step, to wit, a novel method of utilizing air circulation involving "a degree of ingenuity • • • which must have been the result of thought and experiment". (Lord Watson in Thomson v. The American Braided Wire Co., (1889) 6 R. P. C. 518).

Now, if the claims in the patent in suit be examined, the first characteristic therein to be noticed is that nowhere is there claimed precisely as material any particular method of utilizing the air circulation, except, perhaps, the statement that the current of heated air is "created by means other than variations of temperature".

This was pointed out, and indeed insisted upon, by the Supreme Court of the United States, in the case of Smith v. Snow (Jan. 7, 1935, 294 U. S. R. p. 1) where

> only so much of the patent as relates to a method for incubation

was involved; and the only question presented was

> What scope may rightly be given to claim 1 of the patent?

The opinion of the Court was delivered by Mr. Justice Stone; and, in the course of his judgment, the following statements occur:

> Moreover, while the specifications and drawings show a particular arrangement of the eggs and a particular direction of the current, nowhere in specifications or claim, is it stated either that the direction of the current is material or, what is the equivalent, that the order in which it reaches the eggs is material.
>
> • • • The specifications and claim both contemplate a continuous circulation of the current of heated air through the chamber, which, regardless of its direction, would continuously operate, by repeated contacts with the eggs in all stages, to equalize the temperature throughout the chamber by carrying heat units from the warmer to the cooler eggs (p. 12).
>
> • • • Such continuous circulation of the air at constant temperature, lower than that of the more advanced eggs and higher than that of the less advanced, tends to produce the equalization of the temperature of the eggs by flow of heat units from the warmer eggs to the cooler, regardless of the direction

> of the current in the circuit, and regardless of the particular stage of the eggs which it reaches first. * * *
>
> It is evident that Claim 1 does not prescribe that the current of air shall be propelled by any particular means, except that it shall be by means other than variation of temperature, nor does it prescribe that the means of propulsion shall be given any particular location, or that the current of air shall be guided by any particular means or given any particular direction (p. 13).

In the judgment, these statements in regard to Claim 1 are subsequently qualified by pointing out that the other claims of the patent (N. B. Meaning, no doubt, No. 4 of the apparatus claims) speak, in particular, of the power driven fan and of curtains.

> arranged to permit the air to circulate from the bottom of the chamber into the part of the chamber behind the curtains;

but that refers only to the structure of the apparatus. The arrangement, so it is claimed, is only "to permit the air to circulate from the bottom". Nowhere is it prescribed as an essential integer of the claimed invention that the eggs should be placed in any particular order in the incubator,

> or that the propelled current should reach them in any particular order (p. 14).

The conclusion of the United States Supreme Court on that feature of the case was that there was nothing in Claim 1

> to restrict the patent to any particular order of arrangement of the eggs or any particular direction or means of control of the current of air, other than its velocity, and nothing to estop the patentee from asserting that the claim is not restricted by such features (p. 16).

This conclusion, with which we agree, is, in our view, decisive in respect to the main ground upon which the learned trial judge based the validity of the respondents' patent; for what was said of Claim 1 by the United States Supreme Court is also true of the other claims; and it follows that, having regard to Milo Hastings' operations and prior public use in Muskogee, as established in the present case, Smith's claims in the patent in suit are obviously too wide.

In Smith v. Snow, Claim No. 1 was held valid by the Supreme Court of the United States; but it was distinctly stated that it was upheld on the ground that Smith

> was the first to apply mechanically circulated currents of air to eggs • • • arranged • • • in staged incubation.

It was said that he had

> thus solved the major problem of artificial incubation by replacing "the old type of incubation with eggs arranged at a single level while in a single stage of incubation".

But it was also stated that the question whether "it was invention (was) not seriously disputed here" and "that the method employed in the Smith type of incubation was novel and revolutionary in the industry (was) not challenged".

This was as between Samuel B. Smith and E. H. Snow in the particular case presented to the Supreme Court of the United States. In that case, Hastings was not a witness, nor was there any evidence of what his prior use had been. The judgments of the Supreme Court of the United States carry the greatest weight and are entitled to the greatest respect. But because the record now before us is so widely different from the record in Smith v. Snow, we feel that the conclusion reached by us must also be different. Indeed, and more particularly in view of the opinion delivered by Mr. Justice Stone on behalf of the Court, we are led to believe that had the prior public use of the patented method and knowledge thereof by Milo Hastings been adduced in evidence in the Snow case, the result would have been different.

We may add that our view in that respect is shared by the United States Circuit Court of Appeals for the Second Circuit in Smith v. Hall, which is the most recent judgment on the question at issue and where it is stated:

> This is the first time the prior uses at the Davis Place and at Muskogee have been so fully presented and substantiated.
>
> On the record now before the court, it is impossible to agree that Smith's discovery was not known or used by others in this country before his invention or discovery thereof.

What was said of the situation in the United States in the latter judgment equally applies to Canada as the law stood at the time when the disputed patent was issued.

What are, after all, the essential features of the invention contended for by Smith as he has himself expressed them in his claims:

(1) A method of hatching a plurality of eggs

(2) By arranging them at different levels

(3) In a closed chamber

(4) The chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture; and

(5) Applying a current of heated air

(6) Said current being created by means other than variations of temperature (or—claim 2—"power driven in an adjacent chamber through openings into the egg chamber"; or—claim 3—"being vertically directed in an adjacent chamber to circulate in the egg chamber through upper and lower openings between said chambers");

(7) The current of air being of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber with substantially the same temperature;

(8) Whereby the air will be vitalized (i. e. a process of ventilation);

(9) The moisture conserved;

(10) And the units of heat will be carried from the eggs in the more advanced stages of incubation

to those in a less advanced stage for the purpose specified.

We have the large capacity, the eggs at different levels in a closed chamber, the circulation of air created by means other than variation of temperature (the fan or the blower), the ventilation, the moisture and the staged incubation—all present in Hastings' prior use and venture and all reading into the claims as they were expressed and made by Smith. We are not asking ourselves for the present whether there were divergences between Hastings' public use and practice and Smith's actual method. We are taking Smith's method as he has claimed it and we are forced to the conclusion that undoubtedly, as expressed, the claims are too wide and the greater part of them, if not all, was already anticipated and precluded by Hastings' public use.

So far as the apparatus claims are concerned, it is doubtful if, standing alone and independently of the prior knowledge and prior user, they would have been regarded as sufficient in themselves to support a grant of letters patent. But we would say that upon the evidence in this case we do not find it possible to declare that the advance, if any, can be regarded as good and sufficient subject-matter of a patent. The closed chamber, the corridor provided with air distributing space in its upper portion, the power driven fans, the partition between the air distributing spaces and the egg chambers, the passageways, the egg trays with mesh bottoms removably mounted upon racks and means to heat the air circulating through the adjacent chamber were

all present in Hastings' user and method. No particular claim is made by Smith for "the arrangement of the tilting racks" which the learned trial judge found subject-matter to a lesser degree than the main point concerning the method of utilizing "the air driven and circulated through the egg chambers in the Smith incubator".

Any difference that might exist between the Smith structure and the Hastings structure consists only in mechanical details. So far so that it would seem to us that had Hastings been successful in securing a patent for his structure as described in the evidence in this case, claims 4 and 5 of Smith's patent would be regarded as infringements. And, of course, the reverse conclusion follows that Smith's claims 4 and 5, coming, as they do, several years after it, are defeated by Hastings' prior public use.

A fortiori, claims Nos. 4 and 5 ought to be regarded as invalid and void as embracing more than Smith could claim as new; and, indeed, as claiming something which, having regard to the prior public use of Hastings, did not amount to an invention in the pertinent sense.

The appeal must, therefore, be allowed with costs both here and in the Exchequer Court of Canada. The information of the Attorney General of Canada shall be maintained and there will be a declaration that the letters patent No. 217,777 issued to Samuel B. Smith, on the 18th day of April, 1922, are invalid and void and that the same are cancelled and set aside.

SMITH INCUBATOR COMPANY *v.* ALBERT SEILING.	We concur: "L. P. Duff" "H. H. Davis" "P. Kerwin" "A. B. Hudson"

Coram: The Chief Justice and RINFRET, DAVIS, KERWIN & HUDSON, *JJ.*

RINFRET, *J.* This is an appeal from the judgment of the Honourable Mr. Justice Angers, in the Exchequer Court of Canada, dated the 29th day of January, 1936, dismissing the appellant's action for an injunction and damages for the infringement of its patent No. 217,777. The patent involved is the same as was considered in the judgment of this Court in the case of His Majesty the King v. Smith Incubator Company, delivered at the same time as the present judgment.

So far as it applied, the whole of the evidence in the former case was made part of the evidence in the present case. The issue in respect of the validity of the appellant's patent must, therefore, follow the decision in The King v. Smith Incubator Company.

In his judgment, the learned trial judge in this case did not pass upon the validity of the patent already upheld by him in the judgment in the other case. But, having formally held that

> the only element of novelty in the Smith's patent, as set forth in the (former) case, is the method of circulating the hot air in the incubator and the method of turning the eggs periodically during the incubation process,

he found that the method in this respect used by the defendant was quite different; and, accordingly, he failed to see any infringement by the respondent.

The Smith patent having been held invalid by our judgment, delivered upon the information of the Attorney General of Canada, it become unnecessary for us to pass upon the issue of infringement. It should only be stated that the respondent Seiling himself holds a patent covering his incubator (Canadian Patent No. 310061); and, had there been occasion for it, we would not have been prepared to decide that his patent infringes that of the appellant.

However, for the reasons already stated in The King v. Smith Incubator Company, patent No. 217,777 must be declared invalid and void and must be set aside. As the patent is the only ground upon which the appellant can claim infringement, the foundation for his action is thereby removed; and we must decide, therefore, that the action was rightly dismissed by the learned trial judge.

In view of this result, there remains no longer any necessity of discussing at length the appellant's contention that:

> There are two separate lines of authority suggesting what are • • • mutually inconsistent attitudes towards • • • the definition of the scope of a patent monopoly in the patent claims.

The appellant proceeds:

> According to one of these it is proper to consider what is 'the pith and substance' or the 'spirit' of the invention and to give effect to the patent accordingly. The other is to regard the claims as definitely determining the scope of the monopoly which the patent purports to grant and to give or refuse them effect

> according to the expressions they contain when these expressions are properly construed and their meaning determined.

In our view, the rule is that the claims must be regarded as definitely determining the scope of the monopoly, having regard to the due and proper construction of the expressions they contain. Such was the direction given and the rule followed by this Court in Mailman v. Gillette, 1932 S. C. R. 724; Gillette v. Pal, 1933 S. C. R. 142; Burt v. Autographic, 1933 S. C. R. 230; and Schweyer v. N. C. R., 1935 S. C. R. 665. and, notwithstanding the suggestion to the contrary, such was also the rule applied in Electrolier v. Dominion Manufacturers, 1934 S. C. R. 436.

As often observed, of course, the claims must be construed in the light of the rest of the specification; and that is to say that the specification must be considered in order to assist in comprehending and construing the meaning—and possibly the special meaning—in which the words or the expressions contained in the claims are used (Ingersoll v. Consolidated, (1907) 25 R. P. C. 61, H. L. at p. 82). But, as was said in the Electrolier case (1934 S. C. R. 436, at p. 442),

> infringement is a matter depending on the construction of the claims, for there it is that the inventor is required to state "the things or combinations • • • in which he claims an exclusive property and privilege."

Generally speaking, actions for infringement are met with two distinct defences; one being that the plaintiff's patent is invalid; the other being that, whether the plaintiff's patent is invalid or not, the defendant does not in-

fringe. And it may be that, to borrow the words of Frost (Patent Law and Practice, 4th Ed., Vol. 1, p. 349), "the criterion of novelty and infringement in this respect are not the same." But, in each case, the criterion must be determined according to the scope of the monopoly as expressed in the claims; although it is not necessary, to justify a holding of infringement, that the infringing article should be found identically, or in every respect, the same as the plaintiff's patented article. It is sufficient if the infringer has borrowed the substance or spirit of the invention as it can be ascertained from the claims, except in details which could be varied without deteriment to the successful working of it.

The appeal is dismissed with costs.

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CHARLES ELMORE CROPLEY
CLERK

IN THE

Supreme Court of the United States

OCTOBER TERM, 1935

No. [redacted] 36

SAMUEL B. SMITH,

Petitioner,

v.

JAMES MANUFACTURING COMPANY and ELMIRA HATCHERIES, INC.,

Respondents.

RESPONDENTS' BRIEF IN OPPOSITION TO THE CERTIORARI PETITION OF SMITH IN CASE No. 950.

H. A. TOULMIN,
H. A. TOULMIN, Jr.,
Counsel for Respondents.

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IN THE

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No. 950

SAMUEL B. SMITH,

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JAMES MANUFACTURING COMPANY AND ELMIRA HATCHERIES, INC.

Respondents.

RESPONDENTS' BRIEF IN OPPOSITION TO THE CERTIORARI PETITION OF SMITH IN CASE No. 950.

Section I.

The substance of this Reply to this Certiorari Petition is:

(a) There is no conflict of opinion as between the opinion and conclusion of the Circuit Court of Appeals for the Second Circuit and the opinions and dispositions of the two Courts of Appeals in earlier cases where the Hastings prior use was attempted to be proved.

(b) The absence of conflict of opinion is due to the fact that each opinion or action in the earlier cases was based on a different record and a different measure of proof as to the Hastings prior use, than were present and controlling in respondents' case before the Second C. C. A. There the proof of this prior use (before the Court of Appeals for the Second Circuit) was the first and only instance in which the proof was complete, definite and satisfying; and fulfilled the full measure required by law to sustain such defense.

(c) That this high Court has, in the three instances cited below, denied the writ of certiorari where the record in the case sought to be brought before this Court was different in its proof of a vital and controlling defense, from that in the records in the cases relied upon to show conflict of opinion. For this precedent, which is illustrative, see:

1. *Rubber Tire Wheel Co., et al,* Petitioners, v. *Goodyear Tire & Rubber Co., et al,* Respondents, 187 U. S. 641.

This first certiorari petition was denied. It involved these decisions:

Rubber Tire Wheel Co. v. Columbia Pneumatic Wagon Wheel Co., 91 F. 978, and

Consolidated Rubber Tire Co. (successor to *Rubber Tire Wheel Co.*) *et al v. Finley Rubber Tire Co. et al;* 106 F. 175,

on the one part, and on the other part:

Goodyear Tire & Rubber Co. et al v. Rubber Tire Wheel Co. et al, 116 F. 363, by the Sixth C. C. A., Judge Lurton (later Mr. Justice Lurton), Judge Day (later Mr. Justice Day) and Judge Severens. Decided May 6, 1902.

In the latter case the records and essential issues were different.

2. *Rubber Tire Wheel Co. et al,* Petitioners, *v. Goodyear Tire & Rubber Co. et al,* Respondents, 214 U. S. 512.

This second ceriorari petition was denied. It involved these two cases:

Consolidated Rubber Tire Co. (successor to the *Rubber Tire Wheel Co.*) *v. Diamond Rubber Co.,* 157 F. 677, by the Second C. C. A., on the one part, and

Goodyear Tire & Rubber Co. v. The Rubber Tire Wheel Co., 116 F. 363 (Sixth C. C. A.) on the other part.

3. *Rubber Tire Wheel Co. et al,* Petitioners, *v. Goodyear Tire & Rubber Co. et al,* Respondents, 223 U. S. 724.

This third certiorari petition was denied. It involved these two decisions:

Diamond Rubber Co. v. Consolidated Rubber Tire Co. (successor to *Rubber Tire Wheel Co.*) *by this Court* reported in 220 U. S. 428, on the one part; and

Goodyear Tire & Rubber Co. v. Rubber Tire Wheel Co., by the Sixth C. C. A., reported in 116 F. 363, on the other part.

All these denied certiorari petitions were based on the ground of alleged conflict of opinions arising from material differences in the record proofs in the respective cases.

And may we say also that this defense of prior use by Milo Hastings was not in the records heretofore before this Court in the cases of Smith v. Snow, 294 U. S. 1, and of Waxham v. Smith, 294 U. S. 20.

Our position is that the denial of this present certiorari petition would be in accordance with the pronounced precedents furnished in the Rubber Tire cases. There this Court three times denied certiorari petitions where the proof in the case sought to be brought up was essentially and controllingly different from that in each case in which the petition was filed.

Such is the definite situation in this instant case.

The records and proofs in the Goodyear case decided by Judges Lurton, Day and Severens were:

Different in fact and legal effect, and consequently in result, from the records and proofs in the decisions set up in each and all of said certiorari petitions. And hence the Writs of Certiorari were denied.

For instance, in the Columbia case (91 F. 978), Judge Thomas attributed to the Grant patented tire a certain operation:

> "A rubber held in the channel by a longitudinal wire, so firmly that it may not escape, yet so freely that it may have the same lateral play through its whole extent." (P. 987.)

While in the Goodyear case (116 F. 363) Judge Lurton, Judge Day and Judge Severens, on the record in that case, found that:

> "This new capacity claimed for Grant's structure is a supposed capacity of his rubber for lateral movement." (P. 373.)
>
> "It is very plain that the degree, if not the very existence, of this capacity for 'side tipping,' depends upon the tension of the retaining wires." (P. 374.)
>
> "But if the retaining wires were tightened to their full tension when their ends were welded or otherwise united, their capacity 'to rise or yield to the excessive strain applied to the rubber' is not shown to exist." (P. 375.)

But this Court found that in this Goodyear case the record and testimony as to the invalidity of the patent were different from the record and testimony in *Diamond Rubber Co. v. Consolidated Tire Co.* (successor to *Rubber Tire Wheel Co.*) reported in 220 U. S. 428. At page 430, this Court said:

"We may say at the outset of this asserted *conflict** between the cases that the Court of Appeals for the Second Circuit considered that there was no antagonism between its decision and that of the Court of Appeals for the Sixth Circuit. It proceeded, as it in effect said, upon *'new facts and features which have been added to or developed from the records in the earlier cases.*" (P. 430.)

And this Court further said:

"The respondents, the Tire Company, contend that the tire is at once firm and mobile in its channel, 'creeps' (moves slowly around the edge of the rim), and will yield laterally, and thus the lateral blows against it will be cushioned. It is further contended that if the tire be 'tipped from its seat in the channel by a side blow' it 'automatically restores itself to normal position when the side pressure is released'." (P. 433.)

"This tipping capacity is made the pivot of the controversy. *It was as to that that the Court of Appeals for the Sixth and Second Circuits disagreed either upon the difference of the testimony in the cases, or more deeply, on principle.*" (P. 434.)

Conclusions Arising from the Above

1. Thus it will be seen that this Court denied all of these certiorari petitions where the holdings were based on material differences in the records or proofs.

2. And thus it will also be seen that where the records and proofs in two cases are in conflict, then that the opinions that follow the respective records and proofs, are not different due to errors of law, but due only to the differences in the facts of the two cases, *which leaves both opinions free of the charge of being in conflict one with the other.*

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*All italics in quotations in this Brief and Appendix are ours.

3. We understand that this Court makes the basis of granting certiorari petitions the correction of errors arising on the same essential facts—as distinguished from granting this writ in cases where the fact basis of each case is different from that in the other.

Therefore, we submit that:

(a) There must be conflict *between two or more decisions* of the lower Courts *on equal records* establishing the same defense.

(b) But when opinions on their faces show that the proofs in the cases differed on the vital question involved, then the opinions are not in conflict, *but each is presumed to be correct on the record to which it pertains.*

Section II.

Our position is that the record of the cases of Smith v. James Manufacturing Co. and Elmira Hatcheries, which petitioner seeks to bring before this Court, is entirely different from the record as to Hastings prior use in the former case of Wolf v. Buckeye Incubator Co., 296 F. 680, 6th C. C. A., affirming Buckeye Incubator Co. v. Wolf, 291 Fed. 253; and likewise different from the record in Cooley v. Buckeye Incubator Co., 17 F. (2) 453, by the Third C. C. A., affirming Buckeye Incubator Co. v. Cooley, unreported.

In the Snow and Waxham cases, 294 U. S. 1, 20, recently decided by this Court, there was no proof (none —much or little) on the subject of this prior use by Milo Hastings.

Fact Findings and Conclusions of Law by the Court of Appeals for the Second Circuit

This opinion first states that Claim 1 of the Smith patent was held valid and infringed in *Smith v. Snow* (294 U. S. 1) and *Waxham v. Smith* (294 U. S. 20). Then makes this important and pertinent reference to the Hastings prior use involved in the present petition for certiorari:

"Athough the patent has been held valid in a number of cases, only two Circuit Courts have considered Hastings. In a prior litigation (*Buckeye v. Wolf*, 291 Fed. 253, [N. D. O.], affd. 296 Fed. 680 [C. C. A. 6]), there was introduced the publication in The Dollar Hen and other publications as well as the Hastings' application and there it was found that these did not describe an anticipation of Smith's method. While the patent application is referred to, no mention is made of the brief of Hastings' patent attorneys. *Hastings was not a witness nor was any witness called to testify to what his prior use had been.* In *Buckeye v. Cooley* (17 F. [2d] 453) the same evidence was in the record and Hastings was a witness, but the Third Circuit found his testimony unconvincing and that alleged prior uses were not of Smith's method because they did not provide for a regular current of air. *This is the first time the prior uses at the Davis place and at Muskogee have been so fully presented and substantiated.*

"On the record now before the court, it is impossible to agree that Smith's discovery was not 'known or used by others in this country before his invention or discovery thereof.' *Decree reversed."* (Appendix, pp. i, ix, full copy of this Second C. C. A. opinion.)

Thus at the very beginning of the opinion of the Second C. C. A., the Court shows that it had examined the proof concerning the Hastings prior use in the cases of *Buckeye Incubator Co. et al v. Wolf*, and *Buckeye Incubator Co. et al v. Cooley*, and found the evidence on that subject in those cases to be unconvincing and insufficient, which led the Court to say:

"This is the first time the prior uses at the Davis place and at Muskogee have been so fully presented and substantiated." (Appendix, p. ix.)

As petitioner seeks to show that the Hastings prior use proof was the same, or substantially so, in the Wolf

and Cooley cases, we have examined those opinions and have found the situation to be as stated above by the Second C. C. A. and as likewise stated in this brief. We have also found that petitioner's assertions, through counsel, as to the prior use proof in the Wolf and Cooley cases, are seriously incorrect.

In *Wolf v. Buckeye,* 296 F. 680 ,the Sixth C. C. A. affirmed Judge Westenhaver of the lower Court, and in that way adopted, without repeating, his summary of the evidence in the Wolf case respecting the Hastings prior use in that case. This is the summary:

> "The special contentions of the defendant remain to be considered. Of these, the one most strongly stressed is the alleged prior uses and public disclosures of Milo Hastings. He was not called as a witness. *No witness was called to testify what Hastings did. The evidence of his use or disclosure consists of four newspaper articles and his rejected application for a patent.*. The newspaper articles were published in the 'Dollar Hen' in the year 1909, in 'Poultry Culture' in February, 1912, in 'Boston Sunday Globe,' November 10, 1912, and in the 'Technical World' in April, 1913." (291 F. 253, 257; adopted in affirmance in 296 F. 680.)
>
> "The other articles relate to two hatcheries said therein to have been constructed by Hastings, one at Muskogee, Okl., and the other at Port O'Connor, Tex. Whether either hatchery was a commercial and practical success cannot be discovered from the articles, *and it is not proved by the evidence.* When these articles were written, the hatcheries appear to have been ready to open and to do business, but the hatching appears to have been so far only experimental. The subsequent history of the hatcheries, whether they ever passed beyond the experimental stage, or were commercial failures and abandoned for that reason, or failed for some other reason, is not made to appear, * *." (Lower part p. 257,

top p. 258, of 291 Fed.; adopted in affirmance in 296 F. 680.)

The Court of Appeals for the Sixth Circuit, without discussing the evidence referred to in the lower Court, merely overruled a motion by the defeated party to enlarge the record by the introduction of further testimony, and then affirmed the District Court, 296 F. 680. We take this to mean that the C. C. A. adopted the lower Court's findings and found the showing insufficient to establish such prior use.

Testimony of Hastings Showing the Differences Between the Evidence Recited by Judge Westenhaver in the Wolf Case and Adopted by the Sixth C. C. A., as Compared with the Evidence Stated by the Second C. C. A. in Support of Davis and Muskogee Prior Use Incubators

Hastings testified:

"Judge Westenhaver, in his opinion, referring to this application [Hastings'] and the specification thereof, says the following: 'No provision is made for removing foul air, or supplying fresh air, or conserving moisture. No well defined channels for the circulation of air are provided.'" (Rec. 755, Fol. 2263, Vol. II.)

"Ventilation provision was made, as I have previously described, in both the Davis and the Muskogee hatcheries. In regard to the second idea involved in the Judge's statement, which relates to the flow of air in directed channels: In both the Davis and the Muskogee incubators, this flow of air, by means of a forced draft, impelled by a fan, was very definite, as I have described, being in a complete circuit through the fan, the heating chamber and the incubating chambers." (Rec. 755, Fol. 2265, Vol. II.)

Hastings further testified:

> "The actual use in both the Davis and the Muskogee incubators involved the use of a fan which drove the air in a definite enclosed and complete circuit. The air currents in both incubators are directed to flow in definite channels including passage through the egg chambers, in both incubators, this passage being from the top of the chambers down through the trays of eggs to the bottom. * * The circuit of air flow through the chambers, through a heating chamber and through the fan, was the same in both incubators and was a definite closed circuit. The idea that the air was blown into the chamber and allowed to escape where it would, is incorrect. By far the major portion of such air flow was in both cases returned and recirculated through and by the fans. The exception to this is the necessary relatively small fraction of the air flow or exchange of air which in both incubators was provided for to allow of new oxygen and the escape of carbon dioxide gases." (Rec. 754, Fols. 2261-2, Vol. II.)

Hastings also testified:

> "Therefore, we used the method of introducing trays of newer or younger eggs, as we call them, in between the trays of older eggs, to reduce this heating tendency and to equalize the temperature of the eggs at *different stages of incubation,* * *." (Rec. 762, Fol. 2285, Vol. II.)

This establishes controlling differences in the record of the Wolf case as compared with the proof of the Davis and Muskogee incubators in the present cases. *Not a single witness testified at all in the Wolf case as to the Hastings prior use. There was no parole evidence at all.* Yet counsel for petitioner say:

> "The evidence dealing with the Hastings defense was in substance the same in these Wolf and Cooley cases as in the suits at bar against Hall and James."

These differences in the two records, the Wolf and the James and Elmira cases, bring this case within the ruling of this Court when it denied certiorari petitions in the Rubber Tire cases, cited supra, where the differences in the records before the Sixth and Second Circuits are stated by this Court at pages 430, 433, 434, in *Diamond Rubber v. Consolidated,* 220 U. S. (supra, pages 4 and 5). We submit this disposes of the Wolf case.

Opinion in Cooley Case as Compared with That in the James and Elmira Cases as to the Hastings Prior Use

The Third C. C. A., 17 F. (2) 453, affirming the District Court, whose opinion is unreported, grouped several unrelated prior uses, that by Hastings and some others, and used the same language in disposing of all of them collectively—saying:

> "An important thing to note is that in these structures and in their uses when the eggs were to be turned, the trays would be drawn out one at a time, the eggs turned by hand and the trays pushed back. More important still, there was no arrangement [as proved in the Cooley record] for establishing and regulating currents of heated air and, similarly, no provision for obtaining uniformity of temperature other than that initially provided by the heating means. Moreover, it should be noted that the heated air, like the wind, would go where it listeth and, accordingly, it acted as it pleased. *The result was negative, and, judging from what happened to the hatcheries, it was not successful.*" (Pp. 454-5.)

But in the particulars where the evidence touching the Hastings prior use was lacking and insufficient in the above cases, the evidence before the Court of Appeals for the Second Circuit is ample and complete as found by the Second C. C. A. in its opinion. And next, we have

the informed and forceful fact stated at the close of the opinion of the Second C. C. A., to-wit:

> "This is the first time the prior uses at the Davis place [Brooklyn] and at Muskogee have been so fully presented and substantiated."* (Appendix, p. ix.)

Testimony of Hastings Showing Differences Between Material Mentioned by Third C. C. A. in the Cooley Case and the Proof as to the Davis and Muskogee Incubators in James, et al.

Hastings testified:

> "In the opinion of the Circuit Court of Appeals for the Third Circuit, in the case of *Buckeye* * * *v. Cooley,* * * Judge Wooley uses the following language with respect to the Davis incubator of 1911, the Hastings' application for a patent of 1911, and the Hastings Muskogee Hatchery in 1911 and 1912, and the Hastings Port O'Connor hatchery in 1912: 'More important still, there was no arrangement for establishing and regulating currents of heated air, and similarly no provision for obtaining uniformity of temperature other than that initially provided by the heating means. Moreover, it should be noted that the heated air, like the wind, would go where it listeth and, accordingly, it acted as it pleased. The result was negative and, judging from what happened to the hatcheries, it was not successful.'" (Rec. 757, Vol. II, Fols. 2270-71.)
>
> "The statement as applying to the Davis and Muskogee hatcheries, which I have described, that the air currents were not definitely directed, and the 'air going where it listeth' is incorrect, because in both of these plants, as described and illustrated by

*The testimony in Smith v. Hall establishes the Hastings prior use at the country seat of a Mr. Davis, more fully and satisfyingly than was the proof before the Third C. C. A. And on the other hand the testimony and record proofs of the Hastings-Muskogee prior use are established in these James and Elmira cases in a fuller measure. **There record evidence, verifying time, place and results were before the Second C. C. A. and are now before this high Court.**

drawings I have discussed, the air current was a fan-driven current and in a complete circuit, returning to the fan. Therefore, it must have been a definite and directed current, and was." (Rec. 757, Fol. 2271; Rec. 758, Fol. 2272.)

"In both the Davis and the Muskogee incubators the air through the incubating chamber was driven by a fan and was an enclosed or complete circuit, returning to the fan, and, therefore, the air did not go where it listeth but where the fan impelled it." (Rec. 757, Fol. 2274.)

"The Judges' opinion that the results were negative seems to me to have no meaning, since both the incubators hatched successfully, the success of the hatches depending upon the quality of the eggs, as with other incubators. The conclusion that the Judge has derived, that the operation of the incubator was unsuccessful, is evidently from the fact that I did not continue to operate the machines. I built the machine for Mr. Davis. He owned the machine. I operated it the first season, employed by him to do so. There was not sufficient work there on his poultry farm to justify his retaining my services and, therefore, I left upon completion of that hatching season. In Muskogee, I built the machine for Mr. Lieber and was paid to do so and to operate it. The Muskogee machine engaged in custom-hatching. With my own youthful enthusiasm to do a big business quickly, and Mr. Lieber's desire to promulgate the poultry industry, we offered to do custom-hatching at a very low rate. This was a commercial mistake which resulted in showing no profits from the season's work, because the miscellaneous expenses of operation and labor were greater than anticipated, *but the failure of the hatchery to return a profit was not based upon the failure of the incubator to hatch eggs.*

"I did not build either incubator to sell, I was employed to build and operate both incubators for the individuals for whom I built them, and they were

operated for the purposes that I have described, and not to sell these machines." (Rec. 759, Vol. II, Fols. 2275-2278.)

This establishes differences* in the records in the Cooley case in the Third C. C. A. as compared with the proof of the Davis and Muskogee incubators in the present cases. These differences in the two records bring this case within the ruling of this Court when it denied certiorari petitions in the Rubber Tire cases where the differences in the records before the Sixth and Second Circuits are stated by this Court in *Diamond v. Consolidated,* supra.

Section III

The following is a summary of the evidence in the James et al and Hall cases, with especial reference to the new testimony and documentary proof, which *was not considered* in any other previous case. And this new evidence is the basis of the learned opinion of the Court of Appeals for the Second Circuit, which has held:

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This Hastings testimony establishes vital differences in the record of the Cooley case discussed by the District Court, as compared with the proof of the Davis and Muskogee incubators in the present cases.

This primary defense of invalidity received no discussion or no apparent consideration in the opinion of the District Court, Judge Knight, in James et al. Partial proof of this defense has been considered in two other C. C. A. cases, but it was rejected on account of insufficient proof. The complete record of it has never been before any court until proved in the James, Elmira and Hall cases. For instance partial proof of this prior use consisting of only four newspaper articles and the rejected Hastings application for a patent was all that was before the Court in the case of *Buckeye et al v. Wolf,* affirmed in 296 F. 680. This same partial proof was offered in the Cooley case, in the Third C. C. A., with some testimony of Hastings.

The reason given for rejecting this prior use by the Court of Appeals for the Third Circuit on the proof then before the Court was that the proof failed to show the actual construction of the anticipating Hastings incubator or that the same was an operative device. *This was the difference in the proof in that case and these James and Elmira cases.*

New Evidence in the James Case

For the first time in any case, the James record contained proof of the Hastings prior use at Muskogee, Oklahoma, based upon contemporary record evidence comprising original photographs, printed dated publications in the national and local press, the original blower in the Muskogee incubator, and the testimony of a number of new witnesses. This proof disclosed a complete anticipation of the Smith patent.

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In addition to the more complete testimony of Hastings and the repetition of the testimony of various miscellaneous witnesses, some of whom had testified in one case and others in another, but never all in one case to make a complete record, and in addition to a complete deposition on all the facts by Hastings supported by the new, dated documentary evidence, there was produced in this record for the first time the following: The original Hastings blower (Exhibits 22B-22F), used as the means for producing the forced draft circulation in this Muskogee incubator. This was located near Muskogee on the farm of Hastings' partner, Lieber. It was produced and photographs of it appear in the record of this case. This is new evidence. (Rec. Vol. 3, pages 1403-4, Exhibits 22B-22F.) It was developed here, and in this record, for the first time, that *in 1926 Smith had his man Taggart try to buy this blower used by Hastings in this Muskogee prior use. Taggart admitted that Smith knew of this use as early as 1923. Taggart's excuse for trying to get possession of this blower from Lieber was that petitioner Smith wished to create a "museum" of previous efforts.* (Taggart Rec. Vol. 2, pages 940-943; Lieber Vol. 2, Rec. pages 858, 859, 863-868; 875.) This attempt to suppress evidence has been condemned in *Keystone Driller v. General Excavator Co.*, 290 U. S. 240.

As to the new witnesses, there was Hickox, at present an executive of an electrical concern in Chicago, who was commercial agent for the electric power company in Muskogee, and as a part of his duties frequently saw the Muskogee incubator in operation, wrote articles about it to promote the sale of electric current, and had photographs taken of it. He produced his original scrapbook with these original photographs, the type-written copy of his article and the newspaper and magazine clip-

pings showing the local and national publication of his articles. (Rec. Vol. 3, pages 1411-1421. Exhibits 26A-26-G.) This record proof, as well as other photographs and publications were identified by both Hickox and a new witness Peabody, who at that time was the electrical contractor who installed the electrical equipment in this Muskogee incubator. He testified as to the installation of the blower mentioned above. Peabody is now an executive of the Westinghouse Electric & Mfg. Co. Neither Hickox nor Peabody had any interest in the litigation.

Another new witness was C. T. Brewer, a retired United States Postal employee, who had been a customer of Hastings Muskogee incubator, testifying Hastings hatched over a thousand eggs for him. (Rec. Vol. 2, pages 907-908.)

Another new witness was Van D. Campbell, a hatchryman, who as a young man, visited with his parents Hastings incubator when Hastings was hatching eggs for his parents. (Rec. Vol. 2, pages 911-914.)

Lieber testified completely for the first time. (Rec. Vol. 2, pages 856-900.) He was Hastings' financial backer and partner. His testimony was not before the Sixth or Third Circuits.

L. W. Pitts' testimony (Rec. Vol. 2, pages 900-905) was not before the Sixth or Third Circuits.

In addition to the foregoing, new publications in the national press were produced, such as "Reliable Poultry Journal," of April, 1912 (Exhibit 20, Vol. 3, Rec. 1396-1399); "Popular Mechanics Magazine" of November, 1912 (Exhibit 24, Vol. 3, Rec. 1407-1409), and "Electrical World" of July 6, 1912 (Exhibit 25, Vol. 3, Rec. 1410). The new witness Hickox furnished the photographs and descriptive matter upon which the Electrical World article was based.

The new witnesses in the instant case and the new record evidence, plus the presence in this case of the complete testimony of all previous witnesses, some of whom appeared in one case and some in another, conclusively answer the questions of previous Courts, both as to construction and operativeness of this prior use. Consequently, the Court of Appeals for the Second Circuit was able to state that for the "first time" these prior uses were "fully presented and substantiated."

In addition to the foregoing witnesses, the plaintiff's own witnesses admitted the existence and operation of the Muskogee prior use. (L. A. Cory, Vol. 2, Rec. 914-919; Richard Shanafelt, Vol. 2, Rec. 919-932; Samuel James Ward, Rec. Vol. 2, pages 932-940.)

Complete Statement of Hastings Prior Use Proof

Hastings started with incubators on a large poultry farm in Illinois, later entered the Kansas State Agricultural College and was in charge of poultry at the Kansas Experimental Station operating incubators until 1906: in 1908 and 1909 he was poultryman for the United States Department of Agriculture, traveling extensively and visiting poultry plants and agricultural experiment stations operating incubators as an expert in the art of incubation. In 1909 he wrote the book "The Dollar Hen," published by the Arcadia Press, New York City.[1]

> "At hatching time the eggs are spread out in trays in a special hatching room, which is only large enough to accommodate chicks in the amount of one-sixth of the incubator capacity, for twice a week deliverings, or one-third if weekly deliveries are desired.
>
> "There are no pipes or other sources of heat in

[1] Defendants' Exhibit No. 13.

the egg chambers. All temperature regulation is by means of air heated (or cooled as the case may be) outside of the egg rooms and forced into the egg rooms by a motor driven cone fan, maintaining a steady current of air, the rate of movement of which may be varied at will. The air movement maintained will always be sufficiently brisk, however, to prevent an uneveness of temperature in different parts of the room."

Here is a complete disclosure of the use of forced draft and staged incubation in the method of incubating and hatching eggs. Mention being made of "twice a week" or "weekly deliveries" it follows necessarily that the eggs in the egg room would have to be of different ages or placed in staged incubation while the motor driven fan furnished the forced draft circulation in order to maintain an even temperature.

In 1910 Hastings built and operated a 6,000 egg incubator for Walter B. Davis[1] at his country home on Kings Highway, Brooklyn, New York, embodying in this operative machine his ideas or inventions as disclosed in "The Dollar Hen." The drawings shown in Defendants' Exhibit 21, Rec. 1400, prepared under the supervision of Mr. Hastings illustrate this incubator, based on the original photographs, published illustrations and descriptions.[1]

The Hastings Muskogee, Oklahoma, Prior Use

In the fall of 1911 Hastings went to Muskogee, Oklahoma, during the boom in that territory, soliciting aid to build a mammoth incubator embodying his ideas of forced draft and staged incubation. In company with

[1] This prior use has been more elaborately proved, in the case of **Smith v. Hall**, than in this James record. The primary discussion in this case of the Hastings prior use will be that practiced with an incubator similar in general principles at Muskogee in the hatching season of 1912 and 1913.

John G. Lieber, a lawyer and business man[1] of Muskogee and a third party named Ed. Hastain, a corporation was formed and a 30,000 egg capacity incubator built in a building during the latter part of 1911 or first part of 1912, and put in operation for the hatching season of 1912 and ran through that season and the hatching season of the next year, 1913, as well. The same principle of forced draft and staged incubation was employed in the Muskogee as in the Brooklyn incubator, but on a larger scale. As Mr. Hastings testified "The general plan of construction and the principle of operation (of the Muskogee incubator) were quite similar and in accord with those of the Davis incubator, such changes as were made were wholly the matter of expediency in adapting the construction of the building space available and because of the larger capacity of the Muskogee incubator."

There is no dispute in the record as to these facts as the petitioner's witnesses, Richard Shanafelt, L. A. Cory, and Samuel J. Ward testified to the building and operation of this Muskogee incubator. Petitioner's witness Samuel J. Ward after saying that the Hastings incubator produced about a fifty per cent hatch said:

> "I am positive that from my visits to the plant where Mr. Hastings was operating, that the thing was actually in operation and did hatch eggs, regardless of the percentage of the hatches. That was throughout the hatching season of two seasons that I remember, and I think it was in 1911 and 1912."[2]

Photographs were taken at the time of this prior use and articles appeared in newspaper and technical publications carrying these photographs, describing this

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[1] Rec. 728, Fol. 2183, Vol. II.
[2] Rec. Vol. 2, p. 939.

incubator, so that its operation and existence does not depend upon unsupported verbal testimony but upon unusually full proof not before any other Court considering this prior use.

In addition to Hastings' own testimony, the writer of some of the above-mentioned articles, Norman B. Hickox, who was commercial manager for the local electric light and power company in Muskogee at the time, and A. D. Peabody,[1] who was the electrical contractor who installed the electrical equipment of the incubator including the fan and blower, were called and testified. Hickox produced his own scrapbook of photographs made under his direction and articles written by him in 1912,[2] and photographs of the identical blower installed in the incubator are also in the record. John G. Lieber, L. W. Pitts, C. T. Brewer and Van D. Campbell testified as to being familiar with the Hastings Muskogee incubator, that it was an operative machine and was run through two hatching seasons.

Based upon the original photographs and descriptions published at the time of the operation of the Hastings Muskogee incubator, assembly drawings were made up, showing the complete machine as embodying forced draft circulation and staged incubation.[3] These drawings are identified as correctly showing this incubator by Hastings, who conceived the same, Lieber who furnished the money to build it, Hickox who saw it in operation and had photographs taken of it in operation and Peabody, the electrical contractor who put in the fans and other electrical work. (Rec. Vol. 2: 831-55.)

The testimony of these witnesses stands uncontra-

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[1] These are new witnesses producing new contemporaneous documents and exhibits. They have no interest in the outcome of the suit.

[2] Defendants' Exhibits 26, and 26A to 26G, and 22B to 22F, Rec. Vol. 3, pp. 1411 to 1420.

[3] Defendants' Exhibits 22 and 22A, Rec. Vol. 3, pp. 1401 and 1402.

dicted and agrees that the Hastings Muskogee incubator consisted of a large room in which there were a series of stacks of egg trays containing from 250 to 300 eggs per tray, each stack containing about 5,000 eggs. There was a corridor in front of the trays for men to work in, loading and unloading the trays. Moisture was provided by water pans. In an adjacent corridor a fan blew an air blast through the corridor and thence downwardly through the stacks of egg trays and back into the fan. This fan was made by the Emerson Electric & Manufacturing Company, with a normal speed of 1150 r.p.m. (Rec. Vol. 2: 853.) The fan was found to give insufficient air, according to Hastings and the electrical contractor, Peabody, and a Sirocco blower was substituted. This blower has been found and photographs taken of it and the blower identified. (Defendants' Exhibits Nos. 22B to 22F inclusive, Rec. Vol. 3: 1403.) This was the blower Smith tried to buy in 1926. (Rec. Vol. 2: 867 and 943.)[1]

The manner and method of the operation of this incubator provided for the distribution of the heat to maintain

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[1] In Defendants' Exhibits 22 and 22A, drawings of Hastings' Muskogee incubator, a door entered into the hatchery as shown on the drawings, marked "A." This led into an antechamber marked "B." A further door marked "C" led into a work room of the chamber marked "D." The incubating chambers, of which there were seven, are indicated by the letter "E." The individual trays that slide into these chambers are marked "F." A chamber marked "G" contained a blower marked "J." At the opposite end of the hatchery is another chamber marked "G-1" which contained the heater marked "H." A thermostat marked "I" was also installed for the purpose of regulating the heat. A moisture pan marked "L" was located in the blower chamber. A passageway behind the incubating compartments, through which the air from the blower passed, is marked "N" and a passageway through which the air also passed and was distributed to the seven individual hatching compartments is marked "O." The circulation of the forced draft current of air impelled by the blower is shown by arrows. Openings with movable slides, marked "R," led from the chamber "O" into the seven individual hatching or incubating chambers. The purpose of these openings and the adjustable slides was to permit of the distribution of the air from the forced draft of the blower to the individual hatching chambers and the slides were for the purpose of adjusting the flow of the air to each hatching chamber as operation required. (Rec. Vol. 2, p. 733.)

equal temperature throughout all egg chambers and was carried out by means of the forced draft of air as propelled by the blower past the heater and distributed in the long chamber marked "O" to the seven separate incubating chambers marked "E." In these chambers the air, which entered at the top, was driven by the forced draft vertically down through the egg trays and was returned by an open space beneath the trays to the fan or blower, from which the circuit passed the heater or continued on a complete continuous circuit. The accuracy of this drawing representing the machine as described in the publications and illustrated by the photographs, is testified to by Hastings, Lieber, Hickox and the electrical contractor, Peabody, who installed the fans and electrical controls.

Lieber said these drawings, were "about as near a drawing of the incubator as it was set up as you could get without taking an actual photograph. Of course, the—it may not run true as to size, etc., or inch or quarter inch, or whatever you might call it, or as to scale, but that is approximately like it was set up after the blower was set up." He testified that this incubator was in actual operation during the hatching seasons of 1912 and 1913—that "it hatched thousands of eggs into chicks;" and that during the year 1912 the percentage of hatch ran from nothing in some cases to as high as 75 per cent or 80 per cent in other cases.

A photograph of this motor driven blower "J" in the incubator, and the interior of the incubator, with this description, appeared in "Electrical World," July 6, 1912. (Defendants' Ex. 25; Rec. Vol. 3: 1410.)

> "Muskogee, Okla., has a 30,000 egg incubator, the heat control and air circulation for which are effected by electrical means, while the growth of the chicks is artificially forced by tungsten electric

light. Use of motor-driven blowers to circulate the air heated by natural-gas burners has made possible the compact construction of this hatchery, the egg trays of which are superimposed on racks twenty deep. Five thousand eggs can thus be handled and hatched in a space of 2 ft. by 4 ft. by 4 ft., requiring only about one-tenth of the volume demanded by the old style incubators."

Hickox stated: (Was not a witness in Wolf and Cooley cases.)

"* * * The large capacity is attained, by superimposing twenty trays, one above the other, so that 5,000 eggs fill a single chamber measuring about 2 by 4 by 4 feet. * * *

"It is a very simple idea, that of placing the trays one above the other, and like all other simple ideas it has been tried before, but failed to work on account of the fact that it was hard to heat up such a large mass of eggs and maintain the temperature constant at all points. This was overcome, however, by the use of an electrical centrifugal fan, which drives a blast of warm air through the mass of eggs from top to bottom and heats the entire mass of eggs (or cools it) at the will of the operator. The amount of moisture in the air is governed by the moisture introduced at the fan, as is shown in Figure 2. * * *

"Outside air can be admitted to this compartment whenever necessary. This also shows the pan of water underneath the fan, to keep the moisture in the air at the right amount. * * *

"From here we enter the main incubator, in which the temperature is always kept at 100 degrees. * * *" (Rec. Vol. 831-51.)

In the Hickox album (Defendants' Exhibit 26) were the original photographs of the motor driven blower "J," the superimposed egg trays "F," which slide in

the incubator chambers "E." Hastings is shown in the work chamber "D." (Defendants' Exhibits Nos. 26B-C-F.)

The Hastings' Muskogee incubator was not financially successful because an attempt was made to do custom hatching for those who supplied eggs to the hatchery at the impossibly low price of one-cent an egg. But the operation of the incubator itself was successful in that it hatched satisfactory percentages of the eggs set in it. Hastings testified:

> "The quality of hatches in the Muskogee 1912 incubator were very highly variable and rated all the way from complete failures of small lots, to back lot winter eggs that were brought in by local poultry men, to excellent hatches that were secured from eggs of a good hatching quality provided by more skilled poultry men. I best recall the hatching percentages of white leghorn eggs that I purchased throughout that hatching season from a man named Gaunt who resided at Benton, Arkansas. I found from an early trial of these eggs that they were good hatching quality, and, hence, for the purpose of producing chicks for sale, we bought throughout the season an average of two cases a week, and these eggs hatched uniformly well throughout the season, and the hatching percentages never fell, with the Gaunt stock, below 70 per cent of all eggs purchased." (Rec. Vol. 2: 739.)

Lieber testified:

> "It hatched thousands of eggs into chicks * * *. My recollection is that it ran from nothing in some cases to as high as 75 and 80 per cent in other cases!" (Rec. Vol. 2: 863.)

Hickox further testified:

> "I probably visited the Hastings incubator five

or six times. Muskogee was a very active growing city; people were coming in all the time, establishing their homes, establishing businesses. And so far as the Hastings business was concerned, to my recollection every time I was ever there there was business being done. People were either bringing eggs to be hatched or were taking away baby chicks, as I recollect it, from their own eggs or were purchasing baby chicks that were being sold there as freshly hatched." (Rec. Vol. 2: 844.)

L. W. Pitts, now a retired government clerk, living in Muskogee, Oklahoma, said that during the years 1911, 1912 and 1913 he was connected with the Indian Agency and was engaged on a small scale in the poultry business operating small incubators. He testified that he recalled distinctly the Hastings Muskogee incubator and that it was in operation in Muskogee during the hatching season of 1912 and 1913. He visited this incubator on several occasions, one time being a visit paid by the Poultry Association of Muskogee during the hatching season of 1912, when the Hastings incubator was in operation. (Rec. Vol. 2: 900-5.)

C. T. Brewer, now a retired United States Post Office employee living in Muskogee, Oklahoma, where he has resided for thirty-two years, testified that Hastings built the Muskogee incubator and that it was operated in Muskogee as a commercial hatchery during approximately the years 1911 or 1912. He had as many as two or three hundred eggs hatched in this incubator himself, and, in addition to the eggs which he had hatched he sold in the neighborhood of one thousand eggs to the company operating the Hastings incubator for commercial hatching. The results of these hatches were satisfactory and he received a percentage of 70 per cent to 75 per cent of hatch. (Rec. Vol. 2: 908.)

Van D. Campbell and his wife operate now the Marathon Hatchery in Muskogee, Oklahoma; he is familiar with the hatching business, is a carpenter and has installed incubators. He came to Muskogee from Kansas in 1911 and recalled the Hastings incubator in Muskogee. He saw the incubator in actual operation himself and he and his family had eggs hatched in this incubator. His testimony was that "I know that it hatched chickens." (Rec. Vol. 2: 912.)

Petitioner's witness Cory testified that he was in Muskogee at the time Hastings had his incubator and that he was acquainted with him. He saw this incubator in actual operation and that it continued to be operated throughout the whole hatching season of 1912 under Hastings' supervision and that it likewise was operated throughout the next season by Hastain. (Rec. Vol. 2: 917.) Although he did not obtain any hatches from the eggs which he placed in this incubator, he testified that he thought at the time that some of his eggs were hatched, but that Hastings was operating a chicken farm a little north of Muskogee, and his opinion was that Hastings had taken the chicks that were hatched from his eggs and put them out on his chicken farm. He further testified that the Hastings hatchery was "well patronized by people interested in the poultry industry at that time." (Rec. Vol. 2: 918.)

Cory was raising chickens at this time himself and selling eggs for hatching purposes to others. He admitted that he had received several complaints from others to whom he had sold eggs as to the eggs not being fertile and not hatching. (Rec. Vol. 2: 916.)

Petitioner's witness Shanafelt, during 1911, 1912 and 1913, lived in Muskogee, Oklahoma, and was interested in poultry raising at that time. He became a customer of the Hastings hatchery and took approximately two

hundred eggs to be hatched and obtained very poor results. However, it develops that when Shanafelt took his eggs to be hatched in the Hastings incubator it was being operated with the exhaust fan and not with the blower. He never turned over to the Hastings incubator but one batch of eggs to be hatched and he saw the machine in actual operation and knew that it hatched some chickens, and that the machine was operated throughout the hatching season of 1912. Also that after Hastings left, Hastain continued in the operation of the incubator. (Rec. Vol. 2: 929 and 930.) Shanafelt testified that Hastings' method of operating this incubator, in the way he handled eggs, was very careless and negligent and that some customers would turn over to him eggs of one breed to be hatched, and, on account of the carelessness of Hastings in the handling of the eggs, would be given chicks of a different breed from the eggs which they had turned over to him. Shanafelt had a small flock of hens himself and was unsuccessful in getting a good hatch of chickens.

> "I know that he did actually hatch chicks in that incubator, regardless of the percentage of the hatch. I am sure, at that time, I got—seems to me it was two or three chickens out of my batch that were white chickens and I was breeding black chickens. I know it hatched some chickens." (Rec. Vol. 2: 928.)

Petitioner's witness Ward lived in Muskogee, Oklahoma, from 1911 to 1913 and was a salesman for the Binding Stevens Seed Company, selling seeds, poultry feed, incubators and supplies. He recalled the Hastings incubator and was in the place of business of the Hastings Muskogee Hatcher several times. He testified that the first hatches which Hastings obtained only ran from five to twenty per cent of the fertile eggs, and that Hast-

ings changed or remodeled his incubator and got better hatches.[1] He admitted that the Hastings incubator was operated through two hatching seasons, but was under the impression that those seasons were 1911 and 1912. The only change or remodeling of the Hastings incubator which he knew of was a change in the location of the exhaust fan and he was positive that the Hastings incubator was actually in operation and did hatch eggs throughout the hatching season of two years. (Rec. Vol. 2: 932-40.)

The witnesses for the petitioner admitted that the Hastings incubator was operated in Muskogee throughout these two hatching seasons. The testimony of Shanafelt, Cory and Ward, as to poor hatches that were obtained, all related to the incubator as originally installed with the exhaust fan as the means of providing the forced draft circulation of the heated air. Hastings testified that the capacity of the incubator was too large to successfully operate and obtain the best hatches with this exhaust fan, which was the reason for the change, substituting for the fan the Sirocco blower with stronger forced draft. *There is no testimony from any witness of any mechanical failure of the incubator to operate, in securing successful hatches of eggs, after the substitution of the Sirocco blower for the fan in the incubator.*

Hickox's (respondents witness) photographs and articles corroborates the description given by Hastings in his testimony and corroborate the illustrative drawing showing the complete incubator. Peabody, the electrical contractor, said of the illustrative drawings, Exhibits 22 and 22a: "represents the general scheme that was employed in supplying warm fresh air for this incubator." As to the success of the incubator Peabody tes-

[1] This change was the substituting of the Sirocco blower for the Emerson exhaust fan.

tified: "I know that incubator was actually used and placed in operation. * * * I did not hear any criticism either of Mr. Hastings personally or the operation of that incubator." (Rec. Vol. 2: 854.)

Thus, this Muskogee incubator was actually built, installed and operated for two years—that is, the two hatching seasons for the years 1912 and 1913. Its construction and operation and the results were testified to by Hastings, Hickox, Peabody, Lieber, Pitts, Brewer and Van D. Campbell. The petitioner's witnesses testified to the same effect: Cory, Shanafelt and Ward.

The only objections the petitioner made to this testimony below were these:

That the construction of this incubator is uncertain, resting on oral testimony without the benefit of contemporaneous memorandum; that Hastings in this incubator was proceeding along an entirely different way from Smith and finally that Hastings' efforts resulted in financial failure, his incubator only operating through two seasons.

In answer to these propositions we directed the Second C. C. A.'s attention to the contemporaneous corroborating memoranda, consisting of photographs taken of the incubator itself at the time of its operation in 1912 and articles describing it published at the same time, such as Defendant's Exhibits 22B to 22F inclusive, Rec. Vol. 3: 1403-4, Defendant's Exhibits 23, 24, 25, 26A to 26G inclusive, Rec. Vol. 3: 1405, 1407, 1410, 1411-21, supporting the oral testimony of the witnesses.

As to the Hastings Muskogee incubator operating along different lines from the Smith alleged invention, there is no doubt on this record but that Hastings used staged incubation along with forced draft circulation.

As a matter of law, the fact that this prior use was unprofitable does not militate against it as a prior use,

nor does the fact that the apparatus was crude and the electric fans not as perfect as they are today militate against it as a prior use.

As Mr. Chief Justice Taft, in *Corona v. Dovan*, 276 U. S. 358, 384, said:

> "It is a mistake to assume that reduction to use must necessarily be a commercial use." (P. 384.)

As said in *Brush v. Condit*, 132 U. S. 39 (1889):

> "The case is that of the public, well known practical use in ordinary work, with as much success as was reasonable to expect at that stage in the development of the mechanism belonging to electrical arc lighting, of the exact invention which was subsequently made by the patentee; and, although only one clamp and one lamp were ever made, which were used together two and one-half months only, and the invention was then taken from the lamp and was not afterwards used with carbon pencils, it was an anticipation of the patented device, under the established rules upon the subject." (P. 48.)

Thus even if the petitioner is right that the Muskogee use was not successful as a financial venture, yet it is still a good prior use.

On the proposition that the testimony of Hastings and the corroborating witnesses contained many mistakes and differences in non-essentials, we believe it is the experience of the Courts and the bar that such a condition is a good reason for accepting the testimony of responsible witnesses because it shows their truthfulness. It is only the untruthful who are meticulously accurate in immaterial details. The Court of Appeals for the Second Circuit has had occasion to so find in *Corrington v. Westinghouse*, 178 F. 711 (2 C. C. A.), where it said:

"It is true that prior use must be established beyond a reasonable doubt, but testimony must be weighed in a patent cause as in other causes and the court *is not permitted to reject arbitrarily the testimony of respectable witnesses because of mistake and differences in non-essentials.*" (P. 717.)

There has been no misrepresentation by Hastings and his witnesses. There has been no rebuttal; indeed, the petitioner's witnesses corroborated this prior use. This prior use is splendidly proved by impartial men of high standing, supported by contemporaneous public statements and published photographs.

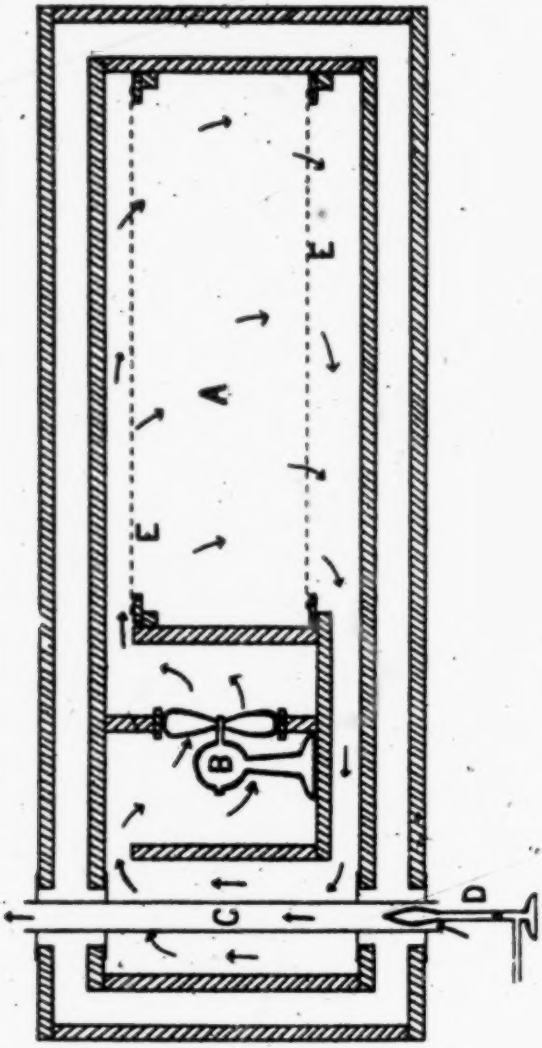
Can it be true that Smith was not aware of these developments of Hastings—that were so widely advertised prior to his efforts in the field? Smith was not called to rebut this presumption.

Taggart, a claimed expert and long employee of Smith, testified that Smith "knew there had been an incubator started down there." (Rec. Vol. 2: 943.)

Petitioner would now have this Court believe that the Sirocco blower was not used by Hastings at Muskogee. Smith's action in sending Taggart in 1926 to buy this blower for $50.00—many times its value—is the best evidence that it was used by Hastings and that its existence was embarrassing to Smith. The reasons advanced why Taggart would not meet Lieber's terms so as to purchase this blower were given by Taggart that he wanted $5,000 for it and also wanted as a stipulation to the purchase an agreement that it should not be destroyed. (Rec. Vol. 2: 943.)

The real purpose of Taggart, on behalf of Smith, was to acquire possession of the physical evidence of this prior use and place it where it would not be harmful to Smith. This practice has been condemned by this Court recently in *Keystone Driller Co. v. General Excavator Co.*, 290 U. S. 240, decided December 4, 1933.

Reproduction of Hastings 1911 Patent
Application Drawing



WITNESSES:
Walter B. Davis.
Isakel & Barkhuff.

INVENTOR.
Milo Hastings
BY
ATTORNEY.

Hastings Patent Application Proof of Prior Use

Under this branch of the case the proof shows two things:

(a) Hastings was a prior inventor to Smith on the issue of prior inventorship.

(b) Hastings had the invention at the time of the prior uses at Brooklyn (1910) and Muskogee (1911-1913) and that the incubator of these prior uses embodied the ideas of his pending patent application.

Hastings filed a patent application of May 3, 1911, which was prepared by himself.[1] It read as follows:

"My invention is that of a hatchery in which I secure better ventilation and a more uniform temperature through the hatching chamber *by substituting a forced draft for gravity drafts.* * * * *B is an electric fan which is to run constantly, maintaining a steady current of air through the hatching chamber,* C is a heater, D any uniform or regulated source of heat. I use a gas flame, the pressure of which is controlled by a governor. EE are fabrics or perforated partitions for the purpose of causing an even horizontal distribution of air throughout the hatching chamber.

"I believe it to be *best to cause the air to enter the hatching chamber from above,* but my invention is not limited to any particular circulation or movement of the air as by the use of the fan the gravity drafts may be overcome and the air caused to move in any desired direction.

"Ventilation I secure through cracks around the door of the hatching chamber or *other small openings in any part of the air circuit.* The air being constantly in motion, requires less rejuvenation than dead air.

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[1] Plaintiff's Exhibit I—Rec. Vol. 3: 1007 to 1047.

> *"The part of my apparatus that is new*, and which has not before been used in connection with hatching devices, *is that of the fan*, and this I maintain to be of distinct utility in securing uniform ventilation and an even temperature throughout all parts of the hatching chamber.
>
> "I claim: The combination in a hatchery for the eggs of domestic fowl, of a room or chamber for holding eggs to be incubated and a *fan pump, or other mechanical device with moving parts for causing a circulation of air in or through such chamber."* (Rec. 1015, Vol. III.)

This application drawing was witnessed by Walter B. Davis, at whose home the apparatus of the application had been reduced to practice as above described in the Brooklyn prior use. (See Rec. Vol. 3: 1047.)

The Patent Office rejected Hastings on the ground of lack of invention because it was the application of a forced draft of air in a circuit, old in heating and ventilating patents, and there was no invention in substituting such old heating and ventilating patent structures as in an incubator where eggs were treated instead of some other material. Hastings insisted that this was invention. The Patent Office Primary Examiner and the Board of Appeals by a majority of 2 to 1, held it was not invention. One of the three members of the Board dissented and held that it was invention. The claim that Hastings appealed upon with the aid of an attorney, read as follows: (Rec. 1026.)

> "A hatchery for eggs embodying an incubating chamber adapted for the reception of superposed trays for eggs to be incubated, whereby said eggs will be arranged in layers one above the other, means for effecting a distribution of air uniformly to the eggs in the chamber, means for heating the air, and mechanically operated means for forcing a uniform circulation of air through all parts of the chamber and past the heater, whereby con-

vexion currents will be eliminated, temperature and gaseous stratification of the air in the chamber overcome, and the eggs subjected to the influence of air of the same temperature and composition."

The same problem that Smith claims he solved is pictured in this application in the signed statements on behalf of Hastings by his attorneys, Messrs. Church & Church, whom we believe have been well known to this Court.

> "The problem presented to applicant was one which finds no analogy in the small incubators such as are commonly used throughout the country, for in them the chamber is of such small size and the eggs located so close together in a vertical direction that the disturbing influence due to convexion currents and air stratification amount to nothing. It is well known that eggs during the process of incubation exert a very marked influence on the air surrounding them, as the temperature of the eggs themselves varies in accordance with the stage of their development and the gaseous emanations tend to produce vitiated conditions which exert a marked influence upon the eggs themselves, and especially upon adjacent eggs, if the eggs are at different stages of their development. * * *"

After stating, on May 24, 1912, when they made these statements, *that they had examined "a mass of data and infomation derived from a practical hatchery of large capacity which is being operated by the applicant,"* (Rec. 1025) *they submitted that the applicant had provided that "this forced circulation must be such as to overcome the counteracting influence of the eggs upon the air when said eggs are in the different stages of incubation.* This feature has seemingly never been effectually worked out by investigators along this line prior to applicant, and it seems to the attorneys to present all of the characteristics of a patentable invention of the highest order." (Rec. 1027.)

And these same attorneys in their brief before the Board stated:

> "Plants actually constructed by applicant have been competent to handle from 30,000 to 150,000 eggs and upwards at one time, for it is only by the handling of such large numbers of eggs that the expense of scientific handling and incubating operations can be reduced to a minimum." (Rec. 1035.)

This brief on behalf of Hastings by Church & Church would be a perfect brief on behalf of Smith. Compare Hastings' argument which he himself made before having an attorney, before the Patent Office, that such a substitution was invention, with the finding of this Court in sustaining the Smith patent to the same effect.* Hastings, receiving the adverse two to one Board decicision made March 11, 1913, had insufficient funds to carry the matter further. (Rec. Vol. 2: 762-3.)

If the Patent Office had rendered the same judgment as this Court has recently rendered, Hastings would have received the patent and not Smith.

***Hastings Filewrapper Statement on Prior Art**

"These patents refer to the use of forced ventilation for purposes unrelated to incubation. The use of a forced draft in combination with an incubator I contend to be patentable, as it is a distinctly new use of a well known mechanical device, which in its new use required invention to reach and which has distinct utility."

"To contend that the new use is not patentable because passages for natural drafts exist in well known types of incubators is unsound; thousand of well known patents including the two cited by your examiner would be thrown out by a similar line of reasoning. There are scores of existing incubator patents based upon the form of these natural draft passages, and I maintain that the introduction of a device for generating a force draft to be of far greater uniqueness and utility than the varying designs for utilizing natural drafts." (Rec. 1019.)

Supreme Court Statement on the Prior Art

"The Proctor & Knowles patent, No. 426,321, of 1890, and the Schwartz Patent No. 535,175 of 1895, for methods and apparatus for drying tobacco and other materials, as well as other procedures for ventilation, are so remote from the problems and procedure for hatching eggs as to call for no comment." (294 U. S., pp. 1, 17.)

This abandoned application is relied upon as proof of the Hastings inventorship and use, under a doctrine summarized by Walker on Patents, Sixth Ed. Sec. 98, p. 123, as follows:

> "Sec. 98. When there is evidence that he who made and abandoned an application for a patent, made also some effort to carry his invention into practical use, then that application is admissible in evidence to aid the court to determine the date and the nature of the invention which was sought to be embodied in a working form."

The Second C. C. A. in the comparatively recent decision in the case of *U. S. Blind Stitch Mach. Corporation v. Reliable Mach. Works, Inc.*, 67 F. (2) 327, Nov. 6, 1933, held:

> "Alleged infringer of patent could rely on drawings specifically described in specification of prior application for patent covering similar machine to show anticipation." (Syllabus 2.)

The drawings relied on in that case were part of an abandoned application but the Court went on to say:

> "We think that claims 1 and 2 are anticipated by the Pomeranz previous application, which was filed June 20, 1925. That petition for a patent provided for an improvement in a machine for fur electrifying, ironing and uncurling. The invention is established by the testimony of the inventor, his patent draftsmen and attorney, *as well as by documentary proof, to-wit, the abandoned application and original drawing. * * * We think the appellee may securely rely on Pomeranz's drawings which are specifically described in his specifications*" (p. 328).

The filing of the Hastings application is a constructive reduction to practice. *Lemley v. Dobson-Evans Co.,*

243 F. 391 (6th C. C. A.), affirmed in *Alexander Milburn Company v. Davis-Bournonville Co.*, 270 U. S. 390 (2nd C. C. A., reversed.)

Therefore, the Hastings application is a constructive reduction to practice, corroborating proof not only of the actual reduction to practice by Hastings but also in its own right a constructive reduction to practice. It is proof of prior inventorship under Subdiv. 4, Sec. 4920 R. S. as evidence that the patentee Smith "was not the original or first inventor, or discoverer" of the incubator patented. *Sundh v. Interborough*, 198 F. 94, 96-7.

We have set forth above a review of part of the evidence which was reviewed also for the consideration of the Second C. C. A. Our purpose in giving this summary of the prior use evidence is to show the contrast of the proof in these cases of respondents, with that in the Sixth and Third Circuit cases relied on by petitioner. *Again, we have the same situation of vastly different records that operated in the Rubber Tire cases to defeat the several certiorari petitions there considered and denied.*

Section IV

Unreported District Court Cases Which Never Reached Any of the Courts of Appeals, Are Improprely in Petitioner's Brief

But as District Court's rulings do not afford an admissible basis for raising the question of conflict of opinions on certiorari petitions, petitioner should not have thus burdened this Court with contentions based on such cases.

We shall, in obedience to this Court's practice, ignore this incompetent material. We are taking the liberty, however, of placing in our Appendix such observations as may serve as a memorandum should this Court desire any information pertaining to those matters.

Section V

The constant recurrences in petitioner's brief of wholly incorrect statements, we feel should be called to this Court's attention.

Top of page 16, they state that the proofs of Hastings' defense in the present cases are "substantially the same" as the proofs in the Wolf and Cooley cases. We believe our discussion supra of the new evidence answers this statement. And the Second C. C. A. specifically made this finding in its decision now under review:

> "This is the first time the prior uses at the Davis place and at Muskogee have been so fully presented and substantiated." (P. ix, our Appendix.)

At page 20, in black-faced type, they say the decision of the Second C. C. A. is in "conflict with the decisions of other Courts *on essentially the same records.*". The first answer to this is that the Court of Appeals for the Second Circuit has found to the contrary as to the testimony in other cases. We think this Second C. C. A. finding is of higher evidential value than this partisan statement to the contrary in petitioner's brief. And we too have distinguished the Wolf and Cooley cases from the James and Elmira case as to the proofs concerning the Hastings prior use, in Section II, page 6, supra.

At page 22, they assert "Staged incubation is not in any way described in the specification [Hastings] has filed, nor is it definitely indicated in any other way contemporaneous with the Davis incubator." These statements do not rise to the dignity of a fact. In Hastings original specification he states:

> "The part of my apparatus that is new, and which has not before been used in connection with hatching devices, is that of the fan, and this I maintain to be of distinct utility in securing uniform ventilation and **an even temperature** throughout all parts of the hatching chamber."

He must have contemplated eggs of different ages in stage incubation because that is the only source of uneven temperature which he was trying to overcome by the use of a fan to make an even temperature. As eggs of different ages have different temperatures, they cause uneven temperature, which is overcome by the use of air circulation to convey the heat from the hotter eggs to the cooler eggs to produce what Hastings says is "an even temperature throughout all parts of the hatching chamber."

Further answer is found at Rec. 1047, Vol. III, and also opposite page 33 of this brief, where Hastings' 1911 patent application drawing is reproduced, and which drawing was witnessed by "Walter B. Davis," the very Davis for whom Hastings built the Brooklyn incubator proved in this James and Elmira record, and in the Hall record, more fully in the latter, and this patent application of 1911 is also witnessed by "Isabel E. Carkhuff," now Mrs. Walter B. Davis. The installation of the Hastings incubator for Davis was in 1910 (Rec. 719). Hastings application was filed May 3, 1911 (Rec. 1011, Vol. III). *Here is record evidence substantially contemporaneous with the record date proved for the making of the Davis incubator.* Note the course of the arrows showing the direction of the air movements circuitously around and around, as shown in the Hastings application drawing reproduced at page 33, this brief, and at Rec. 1047, Vol. III.

The Hastings specification filed in the Patent Office May 3, 1911, contains important statements, as seen quoted at pages 33 and 34, supra.

As to the statement at page 22 of petitioner's brief that no stage incubation is disclosed by Hastings in his specification, we call the Court's attention to the claim prepared May 24, 1912, by Mr. Melville Church, as coun-

sel for Hastings, for purposes of appeal. That claim reads:

> "A hatchery for eggs embodying *an incubating chamber adapted for the reception of superposed trays for eggs to be incubated, whereby said eggs will be arranged in layers one above the other*, means for effecting a distribution of air uniformly to the eggs in the chamber, * * and mechanically operated means for forcing a uniform circulation of air through all parts of the chamber and past the heater, * * and the eggs subjected to the influence of air of the same temperature and composition." (Rec. 1026, Vol. III.)

Then in support of this claim Mr. Church made these statements, among others, concerning stage incubation:

> "Applicant's invention, on the other hand, provides a means whereby success is practically assured, * * and such success is believed to be due to the fact that, he has by a painstaking and very costly series of experiments discovered that the temperature and gaseous stratification in the incubating chamber must be overcome by a mechanically forced circulation of the air * * *and this forced circulation must be such as to overcome the counteracting influence of the eggs upon the air when said eggs are in the different stages of incubation. This feature has seemingly never been effectually worked out by investigators along this line prior to applicant, and it seems to the attorneys to present all of the characteristics of a patentable invention of the highest order."* (Rec. 1027, Vol. III.)

And the Second C. C. A. definitely found (Opinion, Appendix pp. iv, v) stage incubation by Hastings stated in the prior publication "Poultry Culture" (published February, 1912, Defendants' Exhibit 23, Rec. 1405-6, Vol. III). The "Poultry Culture" article stated:

"While this provision for varying the air temperature at different stages of incubtion is requisite to careful work, it is not as necessary with the forced draft hatchery as with dead air incubators, because the moving air adds to or removes heat from the eggs with great rapidity. Because of this fact, eggs at all stages can be placed in the same trays of the Hastings hatchery with little or no injury. Mr. Hastings hatched several thousand eggs under such conditions in his Brooklyn plant last year. This point, while upsetting a tradition, is of no practical significance because eggs of different ages should be kept apart as a matter of general convenience." (Rec. 1406.)

In Hastings book entitled "The Dollar Hen" (Respondents' Exhibit 13), he refers to stage incubation in this passage on page 104:

"At hatching time the eggs are spread out in trays in a special hatching room, which is only large enough to accommodate chicks in the amount of one-sixth of the incubator capacity, *for twice a week deliverings*, or one-third if weekly deliveries are desired."

To get weekly deliveries of chicks he put the eggs in the incubator at different times. For "twice a week deliverings" he partially filled the incubator to get the first of these weekly deliveries of chicks, and for the second delivery of chicks he put other eggs in the incubator half a week later. Or if he wanted deliveries three times a week, *he put eggs in the incubator three times a week*. Thus in any case, he had stage incubation, because the hatches were in "stages," one after another. As the period of embryo incubation is 17½ days (or between 17 and 18 days), the inflexible time fixed by nature, and as the hatching time is 21 days, also fixed by nature, each setting of eggs in the incubator would mark the time (a)

when the embryo would be incubated, and would likewise mark the time (b) when the full creature would be developed and hatched.

In these circumstances, when you put in your first setting you get your chicks on the 21st day thereafter, and then for your next delivery, say later during the same week, you would get your chicks 21 days from that later second setting. And all of this is known in poultry culture, and all of this is expressed in the short term "stage incubation" used in the opinion of this Court in the Snow case.

And now referring to the Hastings testimony in this James case, as to forced drafts and stage incubation, he testified:

> "The idea [in the Third C. C. A. opinion] that the air was blown into the chamber and allowed to escape where it would, is incorrect. *By far the major portion of such air flow was in both cases returned and recirculated through and by the fans.* The exception to this is the necessary relatively small fraction of the air flow or exchange of air which in both incubators was provided for to allow of new oxygen and the escape of carbon dioxide gases." (Rec. 754, Fol. 2262.)
>
> *"Therefore, we used the method of introducing trays of newer or younger eggs, as we call them, in between the trays of older eggs,* to reduce this heating tendency and to equalize the temperature of the eggs at *different stages of incubation,* * *." (Rec. 762, Fol. 2285, Vol. II.)

And this brings us to the finding by the Court of Appeals for the Second Circuit:

> "There is in the record documentary evidence specifically pointing out the fact that staged incubation was embraced in Hastings' idea."

Then the Second C. C. A. quoted from Mr. Church's brief, filed with the Patent Office Examiners-in-Chief, the following:

> "The problem has been to enable the incubating operations to be carried on continuously, if so desired, with eggs at all stages of development." (Appendix, p. vi.)
>
> "When properly adjusted the same blast of air used to heat fresh eggs does equally well for eggs in the advanced *stages* just as the same temperature of the body of the hen incubates the *eggs at all stages* of development * *." (Appendix, p. vi.)

Thus in 1909 when Hastings published "The Dollar Hen," and in 1912 when Mr. Church filed this brief, after his professional association with Mr. Hastings, we have contemporary, dated, printed, published documents showing that Hastings had stage incubation. And then he so testified as stated just above at Rec. 762, Vol. II, Fol. 2285.

On page 20 of their brief, they improperly make it appear that the Hastings incubator built at Mr. Davis' country place was destroyed as it "ended in failure." The testimony is that Mr. Davis met financial embarrassment and gave up his country place, which went to some one else. For that reason they took down the Hastings incubator he had been using because the incubator was built in the room, was attached to the room, and was too large to be taken out of the door. (Rec. Vol. 2, 764.)

At page 20, they also incorrectly made the unsustainable statement that at Muskogee Hastings erected a different incubator from that used at the Davis farm, and that the Muskogee incubator "was also a failure and was destroyed."

The answer to these statements is found in the opinion

of the Second C. C. A. (p. viii of our Appendix) where the Court said:

> "Hastings did not abandon the idea. He promptly took it up on a larger scale at Muskogee, where he built a 30,000 egg plant and embodying the same features. This ran through the hatching seasons of 1912 and 1913. It was similar to the one built for Davis in Brooklyn. * * The principle of a forced draft is conclusively proven, and it appears that Hastings realized that eggs in different stages of incubation could be included in the same closed circuit."

And is further answered at page 30 of this brief, in the first and fourth full paragraphs, and in the last paragraph beginning at the bottom of page 30 and continuing on page 31.

CONCLUSION

The only question here is whether there is conflict of opinion based on like records. Where the records are different the opinions rendered on the respective records are deemed to be correct. That was the case in the Rubber Tire Wheel litigation cited in this brief, Section I, supra. In *Diamond v. Consolidated, 220 U. S. 428, this Court found that the records were different, and, therefore, that the opinions in the Second Circuit and the opinion in the Sixth Circuit were radically different, but that there was no conflict of opinion as each opinion was based on the record it pertained to.*

And exactly this situation is true in these cases now at bar.

It is clearly shown that the opinion and conclusion reached in the Wolf case in the Sixth Circuit and that the opinion and conclusion reached in the Third Circuit, are in accord, respectively, with the proof on which they

were written, while the opinions and conclusions in the Second Circuit are in accord with the definitely different and fuller proofs on which they are correctly founded.

We respectfully beg to submit that petitioner has made no case for the writ of certiorari.

The proof in the James and Elmira case, and that in the Hall case, on which the Court of Appeals for the Second Circuit based its opinions, was, as that Court found to be the fact:

> "* * * the first time the prior uses at the Davis place and at Muskogee have been so fully presented and substantiated.
>
> "On the record now before the Court, it is impossible to agree that Smith's discovery was 'not known or used by others in this country before his invention or discovery thereof.'
>
> "Decree reversed." (Appendix, pp. ix, x.)

And next that there is no conflict of opinion involved in this case because in each former case the opinion or disposition of the case was the result of far different and insufficient proof of the Hastings prior use.

And finally, that no case for certiorari is made on the ground of different or conflicting opinions where the cases are based, as in this case, on far different and unlike evidence.

Respectfully submitted,

H. A. TOULMIN,
H. A. TOULMIN, JR.,
Attorneys for Respondents.

Dayton, Ohio,
May, 1936.

APPENDIX

Opinions of the Court of Appeals for the Second Circuit

The Court wrote one opinion sustaining the Hastings Prior Use and finding the Smith Patent void, as to Claim 1 in the Hall case, and wrote another short opinion in the James and Elmira cases as to Claims 1, 2, 3 and 5. The extended opinion written in the Hall case, the 2nd C. C. A. adopted and applied to the James and Elmira cases by the following language:

> "This suit is for infringement of Claims 1, 2, 3 and 5 of the Smith patent No. 1,262,860, for an incubator granted April 16, 1918, on an application filed October 26, 1916. Claim 1 has been held invalid in *Smith v. Hall,* decided this day. Claims 2 and 3 are similar method claims and fall for the same reasons as Claim 1. With the method claims invalid, there is nothing in claim 5 covering the apparatus to apply the method to support an infringement suit. Decree reversed." (Rec. 1631, Vol. III.)

For the convenience of this Court we reprint in this Appendix the extended opinion in *Smith v. Hall,* referred to above:

UNITED STATES CIRCUIT COURT OF APPEALS

FOR THE SECOND CIRCUIT

SAMUEL B. SMITH,

Plaintiff-Appellee,

against

A. B. HALL AND L. C. HALL, d. b. a.
HALL BROTHERS,

Defendants-Appellants.

Before: MANTON, SWAN AND CHASE, *Circuit Judges.*

Appeal from the United States District Court for the

District of Connecticut. Suit for infringement of patent. Decree for plaintiff; defendants appeal.

Reversed.

ARTHUR E. PAIGE, Esq.
FRANK E. PAIGE, Esq.
Attorneys for Appellants.

ALBERT L. ELY, Esq.
EDMOND M. BARTHOLOW, Esq.
GEO. C. MCCONNAUGHEY, Esq.
Attorneys for Appellee.

MANTON, *Circuit Judge.*

This suit is for infringement of claim 1* of patent No. 1,262,860 issued April 16, 1918, on an application filed October 26, 1916, for a method for the incubation of eggs. This claim was held valid and infringed in *Smith v. Snow* (294 U. S. 1) and *Waxham v. Smith* (294 U. S. 20). It embraces a method of hatching which makes it possible to increase the capacity of an incubator to many thousands by the combination of two major steps. Instead of setting the entire capacity of an egg chamber at one time, the inventor proposed to fill the chamber with successive settings, preferably three or four days apart, so that when the chamber was filled it contained eggs in different stages of incubation, some in the endothermic phase and some in the exothermic phase. Smith propelled a strong draft of properly heated air over the eggs

*Claim 1 reads: "The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a current of heated air, said current being created by means other than variations of temperature and of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified."

thus set in staged incubation "with sufficient velocity to circulate, diffuse, and maintain the air throughout the chamber at substantially the same temperature." In this way, the heat generating property of the further advanced eggs is offset by the heat absorbing properties of the less advanced eggs so that there is a continuous tendency to equalize the temperature throughout the cabinet at approximately the temperature of the introduced current of air.

However, this record differs from those before the Supreme Court in *Smith v. Snow* and *Waxham v. Smith* (supra) for here appellants have offered evidence of prior public use of the patented method and knowledge thereof by Milo Hastings. He had been a poultryman for the Department of Agriculture in 1908 and 1909, travelling extensively and visiting poultry plants and experimental stations operating incubators. In 1909, the "Dollar Hen," a book written by him was published. Among other things he described there an idea for the plan of construction and operation of a new type hatcher. He said:

> "The eggs are kept in bulk in special cases which are turned as a whole and may rest on either of four sides. At hatching time the eggs are spread out in trays in a special hatching room, which is only large enough to accommodate chicks in the amount of one-sixth of the incubator capacity, for twice a week deliverings or one-third if weekly deliveries are desired.
>
> "There are no pipes or other sources of heat in the egg chambers. All temperature regulation is by means of air heated (or cooled as the case may be) outside of the egg rooms and forced in to the egg rooms by a motor driven cone fan, maintaining a steady current of air, the rate of movement of which may be varied at will. The air movement maintained will always be sufficiently brisk, however, to

prevent an unevenness (sic) of temperature in different parts of the room."

This, it is said, was a disclosure of forced draft and staged incubation in the method of incubating and hatching eggs. It is argued that twice a week and weekly deliveries necessarily contemplate that the eggs in the egg room would have to be of different ages and placed in staged incubation with the forced draft circulation maintaining an even temperature.

In 1910, Hastings built and operated an incubator of 6,000 egg capacity for one Davis of Brooklyn, N. Y., embodying these ideas. Drawings prepared for this trial under Hastings' supervision purport to illustrate this incubator and original photographs with published illustrations and descriptions are in the record. Hastings, Davis and his wife all testified that the apparatus and the method of hatching used in this incubator were such as indubitably to anticipate Smith. There can be no doubt that there was a closet chamber, in which the eggs were arranged in stacks of trays through which a current of heated air was blown by a mechanical fan. *The* questioned point is whether or not staged incubation was used and known there.* Hastings specifically testified that it was. Davis and his wife both testified that eggs were put in the chambers as they came in, once or twice a week. We should be unwilling to accept this oral testimony if it were uncorroborated. See, Barbed Wire Patent Case, 143 U. S. 275,284; *Deering v. Winone*, 155 U. S. 286,301; *General Motors Corp. v. Leer Auto Supply Co.*, 60 Fed. [2] 904 (C. C. A. 2). But the necessary support is present here. An article in Poultry Culture, describing the later operations of Hastings at Muskogee, said: "* * * the moving air adds to or removes heat from the eggs with great rapidity. Be-

* All italics in quotations in this Appendix are ours.

cause of this fact, eggs at all stages can be placed in the same trays of the Hastings Hatchery with little or no injury. Mr. Hastings hatched several thousand eggs under such conditions in his Brooklyn (Davis) plant last year." This was published before any motive for so declaring could be possible. Further indication that staged incubation was used at the Davis plant is taken from the Hastings' application for a patent, and the file wrapper relating to it. This application No. 624,885 was filed May 3, 1911. *It was designed to embody the invention practiced by Hastings at the Davis plant,* and is witnessed by Mr. Davis and Isabel Carkhuff, the present Mrs. Davis. The drawing of the apparatus shows an undivided egg chamber down through which air is driven by a fan so that it circulates through a source of heat and then is drawn through the back of the fan and again started on its circuit. There are no separate chambers shown and in his application Hastings makes no mention of any way of providing separate chambers with different temperatures. In view of Hastings' avowed intention of incubating large numbers of eggs at the same time, and his substantial declarations that he did have the incubator at Brooklyn operating with two thousand eggs in it, he must have had eggs of varying stages of incubation there, since it is clear that the eggs were supplied in relatively small amounts. There is in the record documentary evidence specifically pointing out the fact that staged incubation was embraced in Hastings' idea. His original application was undirected by counsel. When he met with difficulties in putting the patent through, he employed attorneys whose brief on the appeal to the three Examiners in Chief contained the following:*

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*This brief was prepared and signed by the late Mr. Melville Church.

"The problem has been to enable the incubating operations to be carried on continuously, if so desired, with *eggs at all stages* of development, and with all of a vast number of eggs subjected to the same temperature and atmospheric conditions best adapted for the development of the embryo. * * The simple way in which applicant overcame the difficulty was through the provision of a mechanically operated air forcing means which would force a rapid circulation of air through the whole collection of eggs in the chamber and past the heater. The mechanical air forcing means is an essential factor; if heat is to be conserved and the conditions maintained uniform; for a circulation, which is due to differences in temperature in different portions of the circulatory system, as, for example, where the air is circulated by the effect of the heater in causing the heated air to rise and pass into or through the incubating chamber, will not answer for large collections of eggs. * * * In the Hastings hatchery, a current of air is blown past each and every egg at the rate of thirty feet per minute and this rapidly moving air quickly bringing the temperature of the egg to approximately that of the air. *This method of heating keeps the temperature of the eggs in the advanced state of incubation down within a few degrees of that of the air,* the exact difference being regulated at will by adjusting the speed of the fan. *When properly adjusted the same blast of air used to heat fresh eggs does equally well for eggs in the advanced stages just as the same temperature of the body of the hen incubates the eggs at all stages of development, without recourse on the hen's part to the 'hatching fever', erroneously supposed to explain the higher temperature of eggs at a more advanced stage of development.* Owing to this fact eggs at all stages may be handled simultaneously with uniformly good results. * * The operator of a Mechanical Draft plant may switch as much 'fresh' or outdoor air into this inner circulation as he is willing to

> heat. The inventor's practice is to use but a small portion of outdoor air except in cases of excessive humidity, when a large exchange of air is utilized as a simplest means of increasing evaporation. * * The introduction of moisture from the mist spray nozzles in the fan boxes to increase hur idity, or running in outside air to decrease it as indicated by egg weights or air cell shrinkage is sufficient for ordinary hatching practice."

The application for a patent was denied by two of the examiners, with one dissenting. Without funds he pursued his application no further.

There can be no question that the quoted language expressed the idea later patented by Smith. The argument that "eggs in different stages may be handled simultaneously" certainly came from the inventor and not the attorneys. Although this specific point is not made in the original application filed by Hastings, his first specification was: "My invention is that of a hatchery in which I secure better ventilation and a more uniform temperature throughout the hatching chamber by substituting a forced draft for gravity drafts." In view of his avowed aim of continuous hatching in great numbers, there is implicit the idea that the eggs will not be in the same stages. And the application and file-wrapper make no mention of different chambers in which eggs of equal maturity would be placed, with the consequent necessity of adjusting the temperature of the air current to the varying requirements of the different stages. In fact, he mentions "uniform ventilation and an even temperature throughout all parts of the hatching chamber." We think the attorney's brief does not represent a new idea but a clarification of an old one.

An abandoned application can be used to clarify the character of a claimed prior use. *Interurban Ry. & c. Co.*

v. Westinghouse El. & Mfg. Co., 186 Fed. 166 (C. C. A. 6) although alone it might not be acceptable to establish prior use. cf. *Wright Co. v. Herring-Curtiss Co.*, 177 Fed. 257 (C. C. N. Y. 1910).

There is *uncontradicted testimony* that this *Davis hatchery* was an operative success. It was in use during the hatching seasons of 1910 and 1911. Its discontinuance is explained by the sponsor's financial reverses and its destruction by the fact that it was built within the cellar of the leased farmhouse which Davis had to leave.

Hastings did not abandon the idea. He promptly took it up on a *larger scale* at Muskogee, where he built a 30,000 egg plant and embodying the same features. This ran through the hatching seasons of 1912 and 1913. It was similar to the one built for Davis in Brooklyn. *Photographs of it were taken at the time of its use; articles which appeared in newspapers and technical publications, with photographs of the incubator, are in the record.* The principle of a forced draft is conclusively proven, and it appears that Hastings realized that eggs in different stages of incubation could be included in the same closed circuit. Drawings of this incubator were produced and received in evidence. That this incubator used a forced draft for the distribution of heat to maintain equal temperature throughout all the eggs in the seven separate incubating chambers, is clearly shown. In these chambers, the air which entered at the time was driven by the forced draft vertically, down towards the egg trays and was returned by the open space beneath the trays, to the fan or blower from which the circuit passed the heat or continued on a complete continuous circuit. The drawing represents the machine as described in several articles with photographic illustrations. The electrical contractor who installed the fans and electrical controls testified. A photograph of the

motor driven blower in the incubator and the description appeared in the Electrical World of July 6, 1912. That description disclosed the use of a motor-driven blower to force evenly heated air to all parts of the tray racks.

An album of original photographs of the motor-driven blower and the superimposed egg trays which slide in the incubator chambers are shown. The practice of the method of Smith's patent is testified to by witnesses who saw the plant operated and who participated in its operation during the two hatching seasons.

In this operation, Hastings testified that the principle of staged incubation along *with forced draft circulation was used.*

Although the patent has been held valid in a number of cases, *only two Circuit Courts have considered Hastings.* In a prior litigation (*Buckeye v. Wolf*, 291 Fed. 253 [N. D. O.], affd. 296 Fed. 680 [C. C. A. 6]) there was introduced the publication in The Dollar Hen and other publications as well as the Hastings' applications and there it was found that these did not describe an anticipation of Smith's method. *While the patent application is referred to, no mention is made of the brief of Hastings' patent attorneys. Hastings was not a witness nor was any witness called to testify to what his prior use had been.* In *Buckeye v. Cooley* (17 Fed. [2] 453) *the same evidence was in the record and Hastings was a witness, but the Third Circuit found his testimony unconvincing and that alleged prior uses were not of Smith's method because they did not provide for a regular current of air. This is the first time the prior uses at the Davis place and at Muskogee have been so fully presented and substantiated.*

On the record now before the court, it is impossible to agree that Smith's discovery was "not known or used by

others in this country before his invention or discovery thereof."

Decree reversed.

District Court Stone Case: Hastings Not a Witness: Only a Master's Report is Produced (P..ix, Appendix to Certiorari Petition) No Court Opinion

At page 13 of their brief they state, that certain depositions, allegedly taken from the Stone case, were "stipulated" into this James case. That is a misstatement. Counsel for Petitioner had certified copies alleged to be of depositions as to the Hastings prior use taken from the Stone case. He attempted to offer them in evidence (Rec. 899, Vol. II). Counsel for James instantly objected, saying:

> "This testimony is objected to on behalf of the defendants as being secondary evidence, and incompetent, and irrelevant, and having no place in the trial of any of the issues involved in this case."

Of the seven witnesses of the Hastings prior use before the Second C. C. A. only two of them testified in the Stone case. *Mr. Hastings* (Rec. 716) *did not testify in the Stone case;* and the witnesses Hickox (Rec. 831), Peabody (Rec. 851), Brewer (Rec. 905) and Campbell (Rec. 911) *did not testify in the Stone case. Without Mr. Hastings no sufficient and complete testimony could be produced.**

Smith v. Sims: Only District Court: No Opinion: Only Findings and Conclusions: No Mention of Hastings Prior Use

It is pretended (p. 13, Petitioner's Brief) that the testimony in support of the Hastings prior use was dis-

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* If this Court desires to examine the testimony of Mr. Hastings as to the Master's report in the Stone case, please see Rec. 760-1, Fols. 2278-82, Vol. II.

posed of adversely in *Smith v. Sims*. In the first place, the present counsel for James and Elmira were counsel for Sims in the case before Judge Baltzell up to and after the time when Judge Baltzell decided against Sims. These counsel then, for reasons not pertinent here, retired from that case by the leave of Judge Baltzell.

It is true that the depositions in support of the Hastings prior use were filed in the Sims suit, but Judge Baltzell never passed upon that defense. On the argument, Judge Baltzell announced that he had previously concluded to decide in favor of the defendant Sims; but that when he read this Court's opinions in the two Snow and Waxham cases, he felt constrained to sustain the Smith patent. *And in his findings of fact and conclusions of law, in the Sims case, no mention is made of the Hastings prior use defense—nothing is said about that defense.* Nor did Judge Baltzell make any mention of the Hastings prior use in the decree he entered. (Plaintiff's Exhibit 2, Book of Decisions.) And Judge Baltzell wrote no opinion in this Sims case.

Therefore, there was never any adjudication by the District Court in Indiana (and for that matter in any other Court) that the Hastings prior use was established in accordance with law; and that the Hastings invention, in incubators tested and used commercially, was an anticipation of the Smith invention, until the opinions here in question pronounced by the Court of Appeals for the Second Circuit in unanimous opinions.

Street Case—Only District Court: Opinion Unreported: Opinion Not Produced in James Record: Advised Opinion in Hall Record

At page 14 of their Brief they discuss an opinion by Judge Molyneaux and state that he had before him the same evidence of the Hastings prior use that is in the James and Elmira cases.

But any contention about that unproduced opinion is, we understand, without value because it was only a District Court opinion which is not in the practice of this high Court regarded as a basis for establishing an alleged conflict of opinion, and we understand that this rule is particularly applicable when the petitioner seeks to bring up by certiorari a case decided by one of the ten Circuit Courts of Appeals.

The King v. Smith: Canadian Court: Complete Opinion Not Produced, Only Extracts (P. 15, Petitioner's Brief)

If this foreign opinion were competent on the issue of conflict of opinions between U. S. Circuit Courts of Appeals, then this Court would require a complete copy of this Canadian opinion. Mere extracts, such as Petitioner admits he has produced, we deem to be insufficient. And even if this Court had such a copy, there would be left the anomaly of this petitioner endeavoring to have this Court compare an opinion of a foreign court with the opinion of an American Court, and then to decide which is correct.

We submit that our diplomatic relations with other nations have not progressed to that stage.

IN THE

Supreme Court of the United States

OCTOBER TERM, 1935

No. 950

SAMUEL B. SMITH,

Petitioner,

v.

JAMES MANUFACTURING COMPANY and ELMIRA HATCHERIES, INC.,

Respondents.

RESPONDENTS' SHORT ANSWER TO PETITIONER'S REPLY BRIEF.

H. A. TOULMIN,

H. A. TOULMIN, Jr.,

Counsel for Respondents.

BENNETT PRINTING COMPANY, SPRINGFIELD, OHIO

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Respondents.

RESPONDENTS' SHORT ANSWER TO PETITIONER'S REPLY BRIEF.

That reply (page 3), referring to the Grant Tire Certioraries, states incorrectly "It is, in fact, a precedent for the grant of certiorari" in this case; and further states:

> "In the Grant tire litigation, petitions for certiorari were presented on three different occasions when there was no conflict between decisions of

> Courts of Appeals on the same issue, and all three applications were denied."

But this Court stated the conflicts in the records of the Second Circuit and the Sixth Circuit Courts of Appeals in its opinion in 220 U. S. 428, as quoted on page 5 of Respondents' Main Brief in this case.* Thus there was different proof on the vital issue of whether there was, or was not, a tipping action of the rubber tire in the Grant patent.

Finally, in their Reply Brief, they say:

> "Respondent James urges that certiorari should not be granted because the conflicting decisions of Courts of Appeals were based on different records. The Grant tire litigation is a precedent against respondent on this point." (P. 3, top p. 4.)

But in *Diamond v. Consolidated*, 220 U.S. 429, this Court specifically reviewed and compared the testimony in the Diamond case in the Second C. C. A. with the testimony in the Goodyear case in the Sixth C. C. A. yet made no finding that the different record in the Goodyear case, and the different opinion based on that record, were wrong, or should be set aside. The Goodyear case was listed on the second page of the Diamond opinion in 220

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* In Consolidated Rubber Tire Co. v. Firestone, 151 F. 237, the Second C. C. A. declared:

"The arguments for and against the patent will be found admirably stated by Judge Thomas in the Columbia Case and by Judge Lurton in the Goodyear Case, respectively. To this discussion little can be added on either side. We shall endeavor, therefore, to confine our attention mainly to the new facts and features which have been added to or developed from the records in the earlier cases." (P. 238.)

"In view of this new aspect of the case we have no reason to doubt that on the present record the Court of Appeals of the Sixth Circuit would reach a result favorable to the patent."

"We are convinced, in view of the new testimony, that he (Firestone's expert) is correct." (P. 239.)

U. S. 428, together with a long list of other cases on the Grant patent. *All of these different rulings, including that in the Goodyear case, were mere citations of what other Courts had done.* And then the learned opinion of this Court simply "affirmed" the opinion of the Court of Appeals for the Second Circuit.

In consequence of that failure of the Consolidated Company to get a decision from this Court reversing the opinion in the Sixth Circuit, based on its different record in *Consolidated v. Goodyear,* the Consolidated Company later filed its third petition for a Certiorari, and that was denied. 223 U. S. 724.

In this third petition, filed in the October Term, 1911, Consolidated set up the claim that there was conflict between the decision of this Court in *Diamond v. Consolidatd,* 220 U. S. 428, and the decision in the Goodyear case decided in the Sixth C. C. A. by Mr. Justice Lurton, Mr. Justice Day, when Circuit Judges, and Judge Severens.

Accordingly, we submit there is nothing in petitioner's reply to justify this Court in granting the present certiorari petition where the record and testimony in *Smith v. James and Elmira* differ to a far greater extent, and in character, than was true of the differences in the record in the Goodyear case as compared with the Diamond case.

Therefore, as the decision of the Court of Appeals for the Sixth Circuit, with the far different record in it, has been allowed to stand, though indirectly brought before this Court in 220 U. S. 428, so also following that precedent, we beg to submit that the decision of the Court of Appeals of the Second Circuit, with its different record from the records in the other litigation on the Smith

patent, be allowed to follow the same course as this Court has allowed the Goodyear case to take, under the like circumstances of the Grant patent being sustained in 220 U. S. 428 and held void by the Sixth C. C. A., 116 F. 363.

Under the opinion and decree in the Second Circuit the Smith patent was made invalid in that Circuit, *or at least invalid as against these respondents,* whose rights were there adjudicated.

And finally, the Smith patent has now expired—on April 16, 1935.

Respectfully submitted,

H. A. TOULMIN,
H. A. TOULMIN, JR.,
Attorneys for Respondents.

Dayton, Ohio,
May, 1936.

OCT 10 1936
CHARLES ELMORE CROPLEY
CLERK

IN THE

Supreme Court of the United States

OCTOBER TERM, 1936

No. 36

SAMUEL B. SMITH,

Petitioner,

v.

JAMES MANUFACTURING COMPANY and ELMIRA HATCHERIES, INC.,

Respondents.

BRIEF ON BEHALF OF RESPONDENTS

H. A. TOULMIN,
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BRIEF ON BEHALF OF RESPONDENTS

Statement of the Case

The Smith patent in suit covers both a method of hatching eggs and an apparatus for that purpose. Claims 1, 2, 3 and 5 are in issue. Claims 2, 3 and 5 are before this Court for the first time; Claim 5 deals with the apparatus, and the remaining claims with the method.

The Invention of Patent in Suit as Defined by This Court.

It is upon this Court's definition of the Smith patent that the respondents rest their case of anticipation of the patent by the Hastings' publications and prior uses; and their case of non-infringement, in the event this Court takes up the latter question.

This Smith patent, as so defined, covers a method of hatching and an apparatus for that purpose characterized by a forced draft of air moving in a continuous path

or circuit over eggs of different ages so that the heat of the older and hotter eggs, which grow hotter as they approach hatching time on the 21st day, will be conveyed to the cooler and younger eggs. This Court has found that the exact order of arrangement of these eggs at different ages is immaterial.

The Smith patent[1] employs a cabinet large enough for a man to walk into having a corridor 5 which the man occupies during loading and unloading of the egg trays 13-14 on either side of the corridor. These egg trays are arranged in stacks of trays in separate compartments. Partitions or curtains 3 and 4 serve to separate the corridor 5 from the stacks of egg trays when the machine is in operation so that the room fans 18 with tilted blades can blow the air current downwardly through the corridor 5 between the curtains or partitions 3 and 4. The descending air current mushrooms on the floor, divides in defined paths, rises through the stacks of egg trays and thence returns from the top of the compartments to the fan for another circuit. A part of the air may leak out of the exit openings 28 and its place is taken by a small amount of incoming fresh air. The major portion of the air returns to the fans over the heating pipes 23 and is circulated over and over again. This air travels as a current in well defined paths from one point to another through the eggs set in staged incubation in a continuous circuit. These eggs remain in the cabinet until they hatch on the twenty-first day. The blades of the fans 18 are tilted to drive the air in one direction only so as to bring about a circuit or current of air moving as a body in order to effect the heat transfer.

The essential features of the patent, as defined by this

[1] Vol. I, p. 671.

Court and as urged upon this Court by petitioner in the *Snow* and *Waxham* cases, are the combination of the features of staged incubation, that is, eggs of different ages, and of a forced draft of air moved by a mechanical means, such as a fan, in a circuit over and over these eggs.

> "* * * It was possible to carry on the process of incubation continuously by placing fresh eggs in the incubator at intervals, as those of the most advanced stage hatched and the new born chicks were removed. * * *
>
> "The specifications and claim both contemplate a continuous circulation of the current of heated air through the chamber, which, regardless of its direction, would continuously operate, by repeated contacts with the eggs in all stages, to equalize the temperature throughout the chamber by carrying heat units from the warmer to the cooler eggs." *Smith v. Snow*, 294 U. S. 1, 6, 12.

The Issues.

The issues for this Court's determination are the following:

I. The validity of the Smith patent in view of the new defenses of the Hastings' prior publications and prior uses for the first time in this Court.

II. Whether respondents' new method of "separate hatching," for the first time before this Court, is an infringement of the Smith patent, particularly in view of the position of the petitioner on the scope of its patent with reference to the Hastings prior uses and publications and the definition heretofore accorded to this patent by this Court.

The Opinions Below.

The Second Circuit Court of Appeals concluded, upon a careful examination of the record, that the Hastings

publications and prior uses showed lack of inventorship in Smith and were an anticipation of the Smith patent. Its findings are all supported by the credible testimony of reputable witnesses. There is no contention by petitioner that these findings of fact are unsupported by competent evidence, but it rather contends that they are contrary to the weight of evidence. The Second Circuit Court of Appeals has made its findings upon the record, which is the record now before this Court, and the question is whether upon such findings of fact, as a matter of law, there is shown lack of inventorship in Smith and anticipation of the Smith patent. Petitioner is urging that this Court review the record and arrive at different findings of fact because it contends that these findings are contrary to the weight of the evidence.

We submit that this is a case that falls within that class of cases which involve no serious questions of law, but rest wholly on the facts established by the proof.

We understand the law to be, as stated by Mr. Justice Brewer in *Lawson v. United States,* 207 U. S. 1, 12:

> "* * * It is our duty to accept a finding of fact, unless clearly and manifestly wrong."

Again, in *Butte & Superior v. Clark-Montana,* 249 U. S. 12, 30, Mr. Justice McKenna said, in quoting *Lawson v. United States Mining,* supra:

> "* * * And we said in *Lawson v. United States Mining,* supra, of the conclusion of the Circuit Court of Appeals in such case—and the concession is as great as appellant is entitled to—'That if the testimony does not show that it [the conclusion of the Court] is correct, it fails to show that it is wrong, and under those circumstances we are not justified in disturbing that conclusion. It is our duty to accept a finding of fact, unless clearly and manifestly wrong.' The findings accepted, the conclu-

sions of law must be pronounced to be of necessary sequence."

Also *U. S. v. United Shoe Machinery*, 247 U. S. 32, 41.

Respondents now submit to this Court for the FIRST TIME the prior publications and prior uses of Milo M. Hastings.

Partial records considered by the Sixth and Third Circuit Courts of Appeal are summed up by the opinion of the Second Circuit Court of Appeals in this case thus:

> "Although the patent has been held valid in a number of cases, only two Circuit Courts have considered Hastings. In a prior litigation (*Buckeye Incubator Co. v. Wolf*, 291 Fed. 253, [D. C. N. D. Ohio,] affirmed 296 Fed. 680 [C.C.A.6]) there was introduced the publication in the Dollar Hen and other publications as well as the Hastings' application and there it was found that these did not describe an anticipation of Smith's method. While the patent application is referred to, no mention is made of the brief of Hastings' patent attorneys. *Hastings was not a witness nor was any witness called to testify to what his prior use had been.* In *Buckeye Incubator Co. v. Cooley* (C. C. A.) 17 F. (2) 453, the same evidence was in the record, and Hastings was a witness, but the Third Circuit found his testimony unconvincing and that alleged prior uses were not of Smith's method because they did not provide for a regular current of air. *This is the first time the prior uses at the Davis place and at Muskogee have been so fully presented and substantiated.*
>
> *"On the record now before the court, it is impossible to agree that Smith's discovery was not 'known or used by others in this country* before his invention or discovery thereof.' 35 U. S. C. A. 31. *Decree reversed."* (83 F. (2d) 217, 220.)

In the Sixth Circuit Court of Appeals, Judge Westenhaver was affirmed without comment on the Hastings

matter. At that time, the construcion sought by the petitioner for his patent was a much narrower one than he seeks today. Later, these publications and the partial testimony of Hastings were introduced before Judge Bodine in the United States District Court for New Jersey in *Smith v. Cooley,* unreported,[1] who concluded that: "a complete anticipation is indicated" but found insufficient evidence to support a finding of commercial success and insufficient evidence as to the details of construction. The present record remedies those defects.

The Third Circuit Court of Appeals[2] limited the Smith patent to "a central corridor and placed partitions or curtains from the top to a short distance from the bottom of the tiers and directed the air current downwardly not through the eggs but through the corridor where it mushroomed on the floor, spread beneath the tiers, ascended through the egg trays and escaped through definitely arranged air outlets." As so limited in detail, it found that the Hastings prior uses did not anticipate the Smith patent because not having the same detailed arrangement and apparently not commercially successful—an error of law in evaluating a prior use. *Corona v. Dovan,* 276 U. S. 358, 384. The findings of that Court on the Hastings prior uses would have been sufficient to anticipate the Smith patent if the patent had then received the same interpretation and scope by that Court as later accorded to it by this Court upon petitioner's insistence. Other lower Courts have considered the matter on partial records.[3]

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[1] Printed with Petitioner's Certiorari Petition.

[2] Buckeye v. Cooley, 17 F. (2d) 453, 455.

[3] We deem it unnecessary to repeat the differences at length between the several records as they are fully set forth in the briefs on petition for certiorari. It is now immaterial what other Courts had before them as the material issue here is whether the proof in this record now before this Court shows the anticipation of the Smith patent that we think it does.

New Evidence on Hastings Prior Use.

For the first time in any case, this record contains proof of the Hastings prior use at Muskogee, Oklahoma, based upon contemporary record evidence comprising original photographs, printed dated publications in the national and local press, the original blower in the Muskogee incubator, and the testimony of a number of new witnesses. This proof disclosed a complete anticipation of the Smith patent.

In addition to the more complete testimony of Hastings and the repetition of the testimony of various miscellaneous witnesses, some of whom had testified in one case and others in another, but never all in one case to make a complete record, and in addition to a complete deposition on all the facts by Hastings supported by the new, dated documentary evidence, there was produced in this record for the first time the following: The original Hastings blower (Exhibits 22B-22F), used as the means for producing the forced draft circulation in this Muskogee incubator. This was located near Muskogee on the farm of Hastings' partner, Lieber. It was produced and photographs of it appear in the record of this case. This is new evidence. (Vol. II, pp. 1113-14, Exhibits 22B-22F.) It was developed here, and in this record, for the first time, that *in 1926 Smith had his man Taggart try to buy this blower used by Hastings in this Muskogee prior use. Taggart admitted that Smith knew of this use as early as 1923. Taggart's excuse for trying to get possession of this blower from Lieber was that petitioner Smith wished to create a "museum" of previous efforts.* (Taggart, Vol. I, pp. 662-5; Lieber, Vol. I, pp. 603, 604, 607, 610, 616.) *Keystone Driller v. General Excavator Co.*, 290 U. S. 240.

As to the new witnesses, there was Hickox, at present an executive of an electrical concern in Chicago, who

was commercial agent for the electric power company in Muskogee, and as a part of his duties frequently saw the Muskogee incubator in operation, wrote articles about it to promote the sale of electric current, and had photographs taken of it. He produced his original scrapbook with these original photographs, the type-written copy of his article and the newspaper and magazine clippings showing the local and national publication of his articles. (Vol. II, pp. 1121-1130. Exhibits 26-A-26G.) This record proof, as well as other photographs and publications, were identified by both Hickox and a new witness Peabody, who at that time was the electrical contractor who installed the electrical equipment in this Muskogee incubator. He testified as to the installation of the blower mentioned above. Peabody is now an executive of the Westinghouse Electric & Mfg. Co. Neither Hickox nor Peabody had any interest in the litigation.

Another new witness was C. T. Brewer, a retired United States Postal employee, who had been a customer of Hastings' Muskogee incubator, testifying Hastings hatched over a thousand eggs for him. (Vol. I, pp. 639-40.)

Another new witness was Van D. Campbell, a hatcheryman, who as a young man, visited with his parents Hastings' incubator when Hastings was hatching eggs for his parents. (Vol. I, pp. 642-44.)

Lieber testified completely for the first time. (Vol. I, pp. 602-634.) He was Hastings' financial backer and partner. His testimony was not before the Sixth or Third Circuits.

L. W. Pitts' testimony (Vol. I, pp. 634-638) was not before the Sixth or Third Circuits.

In addition to the foregoing, new publications in the national press were produced, such as "Reliable Poultry Journal," of April, 1918 (Exhibit 20, Vol. II, pp. 1106-

1109); "Popular Mechanics Magazine" of November, 1912 (Exhibit 24, Vol. II, pp. 1117-1119), and "Electrical World" of July 6, 1912 (Exhibit 25, Vol. II, p. 1120). The new witness Hickox furnished the photographs and descriptive matter upon which the Electrical World article was based.

The new witnesses in the instant case and the new record evidence, plus the presence in this case of the complete testimony of all previous witnesses, some of whom appeared in one case and some in another, conclusively answer the questions of previous Courts, both as to construction and operativeness of this prior use. Consequently, the Court of Appeals for the Second Circuit was able to state that for the "first time" these prior uses were "fully presented and substantiated."

In addition to the foregoing witnesses, the plaintiff's own witnesses admitted the existence and operation of the Muskogee prior use, such as Cory, Shanafelt, Ward, and others. (Vol. I, pp. 644-62.)

In view of the tremendous number of law suits[1] brought by petitioner against hatcherymen throughout the United States after the decision of the *Snow* and *Waxham* suits, and, in view of the fact that the record now before this Court is complete on the vital new issue of infringement as to whether "separate hatching" is an infringement of this patent which petitioner is still further now trying to expand, we submit to this Court this question so that, if it does not agree with us that this patent is invalid in view of these new Hastings' defenses, then it will find that respondents' new apparatus and new method are not infringements of the Smith patent. We believe, however, the anticipation of the Smith patent is so conclusive, that the considera-

[1] Three hundred and fifty-eight suits were reported in the Official Gazette up to September 8, 1936.

tion of this second question will be unnecessary. The Court of Appeals of the Second Circuit did not pass on this infringement question for that reason, although it was briefed and argued before it.[1]

Summary of Argument

Hastings' publications show lack of inventorship in Smith, and corroborate the prior uses of Hastings. The Hastings' prior publication "The Dollar Hen" of 1909 publicly taught the use of an insulated cabinet, in which eggs of all ages would be kept to be incubated and hatched. The eggs were to be arranged on trays in stacks and a continuous current of air was to be blown by a fan over the eggs of different ages in a circuit for controlling their heat. The temperature of the air was to be controlled, the moisture content of the air controlled and the inlet of fresh air controlled. This showed lack of inventorship in Smith, under Sec. 4, U. S. R. S. 4920, Title 35, Sec. 69, U. S. C. A.

Hastings thereafter built and operated successfully an incubator having these principles for Walter B. Davis, of Brooklyn, New York, in the spring of 1911; and filed a patent application disclosing these principles on May 3, 1911, which later became abandoned in 1913 because he did not have finances to appeal from the Patent Office decision that the prior patents on heating and ventilating of rooms was an anticipation of his invention. Hastings took the same position as to this prior art that this Court took as to the same kind of prior art in *Smith v. Snow*, 294 U. S. 1, but the Patent Office overruled him. If it had not, he would have had the patent instead of Smith.

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[1] Cole et al v. Ralph, 252 U. S. 286; Langnes v. Green, 282 U. S. 531; Story Parchment Co. v. Paterson Parchment Paper Co., 282 U. S. 555; Stelos Co. v. Hosiery Motor-Mend Corp. et al, 295 U. S. 237.

In the fall of 1911, Hastings went to Muskogee, Oklahoma, built and put into operation in the spring of 1912 the Muskogee prior use which practiced his ideas that again anticipated the Smith construction and method of operation of a forced draft of air driven by a fan over eggs of different stages of incubation and hatching. This prior use continued into 1913. Smith started his experiments in the winter of 1912-13,[1] and filed his application October 26, 1916. These Hastings prior uses were successful in hatching large percentages of chicks during several hatching seasons for thousands of customers involving the handling of thousands of eggs. Publications describing and illustrating these prior uses in themselves show lack of inventorship in Smith and invalidity of his patent. Smith, as his own witness admitted, knew of this prior use of Hastings and in 1926 tried to buy the Hastings blower used at Muskogee. Smith was not called to rebut this proof of his knowledge of this prior use.

Respondents do not infringe because their incubators do not hatch eggs in their incubator as called for by the claims—they are separately hatched so that there is no "hatching" in respondents' machines. The eggs are removed at the beginning of the last three days of the twenty-one day period from the incubator and placed in a machine that is not charged to be an infringement. The heat of the hotter eggs of the last three days is 180 per cent of the heat of the first 18 days. The eggs are removed from respondents' incubator and their heat is not transferred to the cooler eggs. This eliminates the problem of handling this heat. It permits special treatment during the last three days by different temperature and moisture conditions than applicable to incubating eggs

[1] Buckeye v. Wolf, 291 F. 253, 259.

because of the different physiological condition of the eggs. "Separate hatching" reduces bacillary white diarrhea, which is increased by forced draft machines when used at hatching time. The respondents in their incubator do not have a forced draft of air in a continuous circuit, but have flat-bladed stirrers at the top and bottom of the cabinet for churning and agitating the air, as in the case of the Petersime and Blum machines held not to be infringements by the Sixth Circuit Court of Appeals.[1]

ARGUMENT

Point I

Hastings Publications and Prior Uses Anticipate the Patent in Suit

Hastings wrote the book, "The Dollar Hen," in 1909, which disclosed the apparatus and method of the Smith patent. He put his ideas into practice at Brooklyn, New York, in the fall of 1910 and spring of 1911. He filed a patent application on May 3, 1911. He again put his ideas into practice on a major scale in a 30,000-egg incubator at Muskogee, Oklahoma, starting in the fall of 1911. The hatchery operated during the hatching seasons of 1912 and 1913. Numerous local and national trade publications carried descriptions and photographs of the Oklahoma incubator. Petitioner's witnesses admitted the existence, construction and operation of the Oklahoma prior use. Smith tried to buy its blower in 1926 for $50.00 because he knew of that prior use.

The chief complaints against this prior use by petitioner are that it was not a financial success, its air

[1] Buckeye v. Petersime, 19 F. (2d) 721-722; Buckeye v. Blum, 17 F. (2d) 459.

speed was too low, that the percentages of hatch on the average were not as large as in modern incubators after more than a quarter of a century of refinement, that the eggs were of different ages in the stacks and the incubator was not a success. The operation of this incubator for two hatching seasons with 1,500 to 2,000 customers handling as high as 25,000 eggs at a time, as stated by petitioner's witness Lieber in a deposition offered in this case is ample answer to those objections. Other witnesses of petitioner admit its construction, operation and hatching. There can be no denial of the prior use of the two factors of stage incubation and a fan driven continuous current moving in a circuit over the eggs to move the heat of the hotter to the cooler eggs in a single room.

For the first time in any case, the Hastings' prior use at Muskogee, Oklahoma, is based upon exhaustive contemporary record evidence comprising both original descriptions made at the time by an eye witness, Hickox, and photographs taken under Hickox's direction at the time. There are also presented printed publications in the national and local press fully disclosing the construction and operation which Judge Bodine declared as indicating complete anticipation. There is offered here the testimony of Hickox,[1] the Muskogee Electric Light Company representative in 1911-12, who photographed and wrote up the Hastings Muskogee incubator, and Peabody, the latter being the electrical contractor that installed the electrical equipment in the Hastings incu-

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[1] Hickox and Peabody when they testified had no connection with this case. The former was at the time he testified connected with Curtis Lighting, Inc., manufacturers of lighting equipment in Chicago. From 1910 to the fall of 1912 he was Commercial Manager of the Muskogee Gas and Electric Company. Peabody at the time he testified was Western District Merchandising Manager of the Westinghouse Electric and Manufacturing Co. at St. Louis, Mo. He had been an electrical dealer and contractor in Muskogee from 1910 to 1921.

bator. There is also in this record a large amount of new testimony from other witnesses[1] with the testimony of former witnesses.

The original blower used as the means for maintaining the forced draft circulation in this incubator was located and photographs of it appear in the record of this case alone. It develops here and here alone that *in 1926 Smith had his man Taggart try to buy this blower used by Hastings in this prior use and Taggart admitted that Smith knew of this use as early as 1923.* (Vol. I, p. 664.) The new witnesses and this new evidence conclusively answer the questions of previous Courts who found the proof insufficient both as to the construction and operativeness of this prior use.[2]

Hastings started with incubators on a large poultry farm in Illinois, later entered the Kansas State Agricultural College and was in charge of poultry at the Kansas Experimental Station operating incubators until 1906: in 1908 and 1909 he was poultryman for the United States Department of Agriculture, traveling extensively and visiting poultry plants and agricultural experiment stations operating incubators as an expert in the art of incubation.

(A) Hastings Publication Before His Prior Uses.

This publication has two uses in defeating the Smith patent. The first is that in itself it teaches all that Smith claims as his invention; the second is that it corroborates the facts of the Hastings prior use by a contemporaneous description and explains it publicly where it could be challenged if not true.

Hastings resigned in 1909 from the U. S. Department

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[1] Brewer, Van D. Campbell, Pitts. Vol. I, pp. 638, 642, 634.

[2] Hastings' testimony answers each one of the queries in previous decisions as to points that were not clear to the Judges below. Vol. I, pp 529-36.

of Agriculture to write his book "The Dollar Hen."[1] His ideas originated from a ventilating engineer.[2]

He said in "The Dollar Hen":

> "* * * In a large and properly constructed hatchery, such as is discussed in the last section of this chapter, *the entire composition of the air, as well as its movement, is entirely under control.* Nothing has yet been brought to light that indicates any particular attention need be given to the composition of such air save in regard to its *moisture content, but as the control of this factor renders it necessary that the air be in a* **closed circuit,** and not open to all outdoors, it will be very easy to subject the air *to further changes such as the increasing oxygen,* if such can be demonstrated to be desirable." (P. 95.)
>
> "The writer now wishes briefly to describe the plan of construction and operation of *a new type of hatchery,* the success of which has recently been made feasible by inventions and technical knowledge hitherto unavailable. The plan of the hatchery is on that of a cold storage plant as far as insulation and general construction go. The eggs are kept in bulk in special cases which are turned as a whole and may rest on either of four sides. **At hatching time** the eggs are spread out in trays in a special hatching room, which is only large enough to accommodate chicks **to the amount of one-sixth of the incubator capacity, for twice a week deliverings, or one-third if weekly deliveries are desired."**
>
> "There are no pipes or other sources of heat in the

---

[1] Respondents' Exb. 13, pp. 95; 104-106 of the exhibit.

[2] "* * * As to whether I got the basis for my ideas on incubation from one Madison Cooper, a refrigerating and ventilating engineer, my study of the art of refrigeration, in connection with my employment in the United States Department of Agriculture, led me into a knowledge of Mr. Cooper's method of using a fan circulation of air for the purposes of equalizing temperature in refrigeration. * * * That was before I wrote the book entitled 'The Dollar Hen.' I think I was still in the Department of Agriculture. I think that was late in the year 1908 when I visited Mr. Cooper." (Vol. I, pp. 539, 540.)

egg chambers. *All temperature regulation is by means of air heated* (or cooled as the case may be) outside of the egg rooms and **forced into the egg rooms by a motor driven cone fan, maintaining a steady current of air,** *the rate of movement of which may be varied at will. The air movement maintained will always be sufficiently brisk, however, to prevent an unevenness of temperature in different parts of the room.*
* * *

"* * * In contrast with these blundering instruments we now have available an instrument with which the writer has frequently determined vapor pressure accurately to within a range of two or three vapor pressure units and the instrument is capable of being constructed for even finer work.

"As it is only by means of *air with the moisture content absolutely controlled that the use of a large room becomes possible,* we can now see why this type of hatching remained so long undeveloped. By means of such vapor pressure control the large egg chamber is not only feasible, but the rate of evaporation at once becomes subject to the control of the operator and we achieve a perfection in artificial incubation hitherto unattained.

"The means by which the air moisture is regulated is similar to that used in up-to-date cold storage plants where the air is made moist by sprinkling and dried with deliquescent salts. The regulation of vapor pressure, like that of temperature, may be by electrically moved dampers which switch a greater or less proportion of the incoming current to the sprinkler or dryer as the case may be. The ordinary incubator thermostat gives the necessary impulse for the control of the temperature dampers, while the instrument above referred to is used for the vapor pressure control.

"*As the entire air circuit it closed,* the chemical composition of the air may also be regulated at will. *This results in a reduction of the quantity of heat required to a minimum;* in fact, with the incubator in full swing,

the air will, at times, need cooling rather than warming." (Pp. 104-106.)

In this first paragraph of "The Dollar Hen" quotation Hastings taught the industry the idea of the control of moisture without undue loss in an incubator by complete control of the air "in a closed circuit" and the admission of fresh air, i. e., "increasing oxygen." The admission of fresh air necessarily entails the escape of foul air in the cabinet to make room for the fresh air.

In the second paragraph he taught stage incubation by setting eggs of different ages in the same chamber so as to secure "twice a week deliverings" or "one-third if weekly deliveries are desired."

He taught the use of an insulated room as an incubator such as used in cold storage plants where the walls are insulated.

In the third paragraph he taught "All temperature regulation is by means of air heated (or cooled as the case may be) * * *." Smith also practices cooling his eggs when they get too hot. (Vol. I, p. 156.) In this same paragraph he described the air as "forced into the egg rooms by a motor driven cone fan, maintaining a steady current of air, the rate of movement of which may be varied at will. The air movement maintained will always be sufficiently brisk, however, to prevent an unevenness of temperature in different parts of the room." Here again is taught maintaining even temperature amongst eggs of different ages by a continuous current of air moving over the eggs by a motor driven fan moving the air in a continuous circuit—the Smith invention as claimed.

In the fourth, fifth and sixth paragraphs he teaches the use of moisture and heat absolutely and automatically controlled in a large room by dampers due to the

recent development of new instruments for the control of moisture and temperature.

In the seventh paragraph Hastings again emphasizes that "the entire air circuit is closed" and that the composition of the air is controlled at will as driven by the fan in the closed circuit. He says "This results in a reduction of the quantity of heat required to a minimum," which shows he understood the use of the heat generated by the eggs which could be used to reduce artificial heat by a fan driven "steady current of air" so that as he says "The air movement maintained will always be sufficiently brisk, however, to prevent an unevenness of temperature in different parts of the room."

Here is a complete disclosure of the use of forced draft and staged incubation in the method of incubating and hatching eggs. Mention being made of "twice a week" or "weekly deliveries" it follows necessarily that the eggs in the egg room would have to be of different ages or placed in staged incubation and the motor driven fan furnished the forced draft circulation in order to maintain an even temperature.

In the brief of the petitioner before this Court in the *Snow* case, it was claimed that the essence of the Smith invention was stage incubation and forced draft in a continuous current in combination. (P. 17.) This Court so found, as we understand it. The same claim has been made in this case.[1] In the Hastings "The Dollar Hen," published in 1909, a complete disclosure is made of this identical combination of staged incubation and forced draft in one room. Therefore, it is impossible for the petitioner to claim that he was the first discoverer or

[1] In petitioner's brief in this case (p. 15) he adds the further limitation that "the eggs in staged incubation must be set in one room" as a basis for later argument that the Hastings Muskogee prior use did not have eggs of all ages in one room.

DAVIS HATCHERY OF BROOKLYN, N.Y.

FIG. 1.

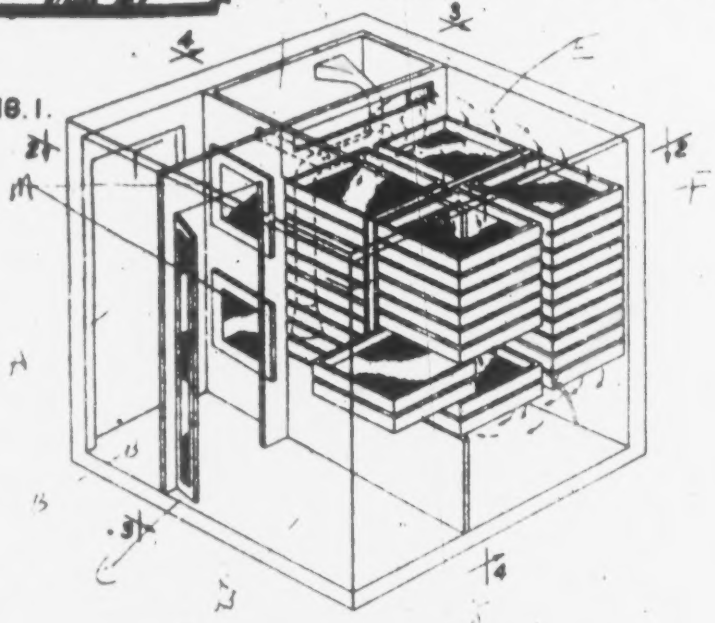


FIG. 2.

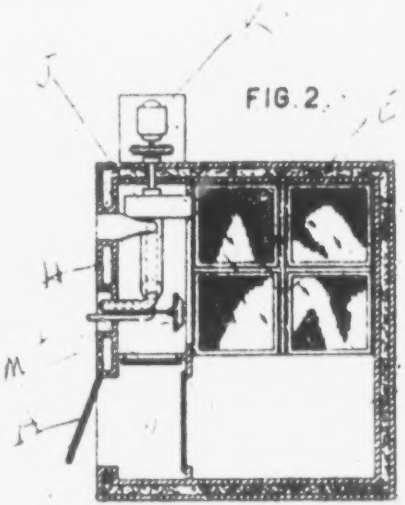


FIG. 3.

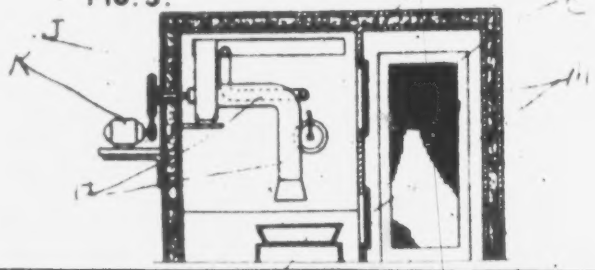
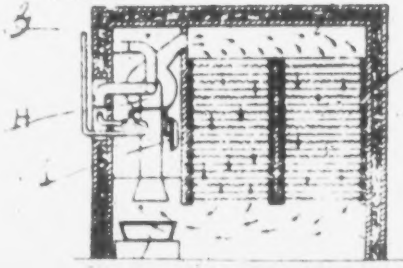


FIG. 4.



inventor of the idea of the combination in 1916, the year of the filing of his application.

This publication of "The Dollar Hen" is an anticipation by its disclosures of the Smith patent and was so pleaded. (Vol. I, p. 10.)[1] The evidence of subsequent Hastings prior uses putting to practice these teachings also shows in the light of this publication that the author of the publication, and not the patentee Smith was the first and original inventor and that the Smith patent is therefore void.[2] The fact that the disclosure of the publication at that time in 1909 had not been reduced to practice does not militate against this publication standing by itself as a complete disclosure to defeat the patent.[3]

(B) Hastings 1910-1911 Prior Use at Brooklyn, New York: Davis Installation.

Hastings built and operated during the season of 1910 and spring of 1911 a 6,000-egg incubator for Walter B. Davis at his country home on Kings Highway, Brooklyn, New York, embodying in this operative machine his ideas disclosed in "The Dollar Hen." The accompanying drawings prepared under the supervision of Hastings illustrate this incubator.[4]

The eggs in this Davis incubator were arranged in superimposed trays in an insulated box 6 feet by 6. A door "A" led into an ante-chamber B from which the door C large enough for a man to enter opened into chamber D in which the superimposed egg trays F were

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[1] Bone v. Marion County, 251 U. S. 134, 144.
Cohn v. United States Corset, 93 U. S. 366, 377.
Seymour v. Osborne, 11 Wallace 516, 555.
Downton v. Yeager Milling Co., 108 U. S. 466, 477.

[2] Corona Cord Tire Co. v. Dovan Chemical Corp., 276 U. S. 358: R. S. U. S. 4886.

[3] Pickering v. McCullough, 104 U. S. 310, 319

[4] Defendants' Exhibit No. 21—Rec. Vol. II, p. 1110, and Vol. I, pp. 507 to 512.

located. An even temperature was maintained by using a motor driven fan J to blow a blast of air into the compartment at the top of the egg chamber E which air blast passed downwardly through the egg trays in defined paths indicated by the arrows to a space below the four tiers of egg trays and thence it passed in a defined path over the heater H and returned to the top of the incubating chamber, making a complete cycle or circuit of air. The thermostat I governed the heater H. The circuit of air passed over a moisture pan L to control the humidity. This machine was operated through the hatching season of 1910 and 1911 and also during the next season.[1] It was operated by Hastings in 1910 and spring of 1911 for Davis and shown to a number of visitors. (R. 506-11, Vol. I.)

The principle and general construction of this machine of forced draft and staged incubation as installed at Brooklyn is illustrated and described in the Hastings filewrapper of his application filed on May 3, 1911, (Vol. II, pp. 727-764.) It follows the teachings of "The Dollar Hen." If the Davis incubator built and operated by Hastings at Brooklyn in the spring of 1911 had not proven successful, it is unreasonable to suppose that he would have gone to the expense of filing an application on May 3, 1911, at about the end of the spring hatching season in view of his financial condition, as he could not even afford an attorney to file his application. (Vol. I, p. 536.)

Based on his success at Brooklyn, Hastings got out a pamphlet entitled "A Million Egg Incubator" as the basis for his efforts to raise capital for a larger machine

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[1] This prior use has been more elaborately proved, in the case of Smith v. Hall, now pending before this Court than in this record. The primary discussion in this case of the Hastings prior use will be that practiced with an incubator similar in general principles at Muskogee in the hatching season of 1912 and 1913.

in Kansas-Oklahoma. This pamphlet contains photographs of the Davis machine and dated letters of recommendation from Davis, the owner of the Davis Poultry Farm in Brooklyn; Orvis, Editor of the "Poultry Digest" and others. It would seem contrary to reason that Hastings would publicly advertise the Brooklyn prior use with names and addresses of persons recommending him as his foundation for asking for additional capital for a bigger installation in Oklahoma unless the Davis installation was such a success in Brooklyn that it would stand investigation. (Petitioner's Exhibit I, Vol. I, pp. 554, 581.) These are the photographs and publications referred to by the Court of Appeals of the Second Circuit.

(C) Hastings Patent Application Proof of Prior Invention and Prior Uses.

Under this branch of the case the proof shows two things:

(a) Hastings was a prior inventor to Smith on the issue of prior inventorship.

(b) Hastings had the invention at the time of the prior uses at Brooklyn and Muskogee and that the incubator of these prior uses embodied the ideas of his pending patent application.

Hastings filed a patent application on May 3, 1911, which was prepared by himself.[1] It read as follows:

"My invention is that of a hatchery in which I secure better ventilation and a more uniform temperature throughout the hatching chamber *by substituting a forced draft for gravity drafts.* I attained this end by the mechanism illustrated in the accompanying drawing. This represents a vertical section of the hatchery, in which *A is a hatching chamber wherein*

[1] Petitioner's Exb. I—Vol. II, p. 727.

are the eggs placed, B is an electric fan which is to run constantly, maintaining a steady current of air through the hatching chamber, C is a heater, D any uniform or regulated source of heat. I use a gas flame, the pressure of which is controlled by a governor, EE are fabrics or perforated partitions for the purpose of causing an even horizontal distribution of air throughout the hatching chamber.

"I believe it to be *best to cause the air to enter the hatching chamber from above, but my invention is not limited to any particular circulation or movement of the air* and by the use of the fan the gravity drafts may be overcome and the air caused to move in any desired direction.

"*Ventilation I secure through cracks* around the door of the hatching chamber or *other small openings in any part of the air circuit.* The air being constantly in motion, requires less rejuvenation than dead air.

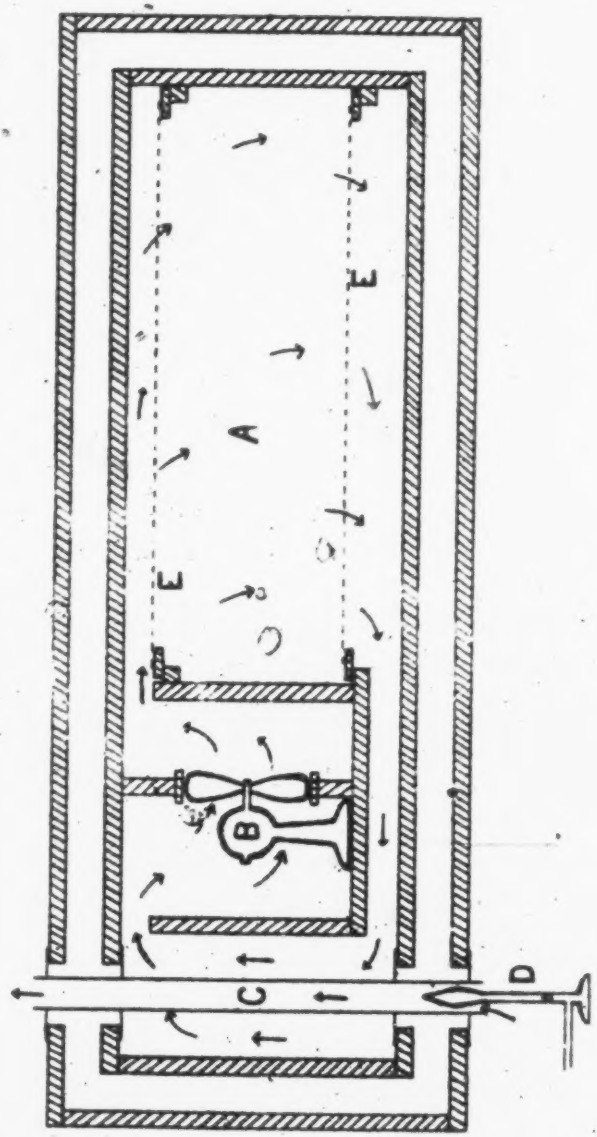
"*The part of my apparatus that is new,* and which has not before been used in connection with hatching devices, *is that of the fan,* and this I maintain to be of distinct utility in securing uniform ventilation and an **even temperature** *throughout all parts of the hatching chamber.*

"I claim: The combination in a hatchery for the eggs of domestic fowl, of a room or chamber for holding eggs to be incubated and a *fan pump, or other mechanical device with moving parts for causing a circulation of air in or through such chamber.*"

This application was witnessed by Walter B. Davis, and Isabel E. Carkhuff (later Mrs. Davis), at whose home the apparatus of the application had been reduced to practice as above described in the Brooklyn prior use. (See Vol. II, pp. 727, 764.)

The Court will observe that the diagram has precisely the elements of the Brooklyn Davis and Muskogee uses —even to the arrangement of the heater, the fan, the course of the air circuit, etc. His statement that he was

FROM PETITIONER'S EXHIBIT I



WITNESSES

Walter B. Davis.

Isabel E. Eschhuff.

INVENTOR.

Milo Hastings

BY

ATTORNEY.

going to produce an even temperature shows the eggs were of different ages, i. e., stage incubation. **The only source of uneven temperature would be eggs of different ages.** He proposed to control the fresh air inlet and therefore the escape of foul air to make room for it by "small openings in any part of the air circuit."

The Patent Office rejected Hastings on the ground of lack of invention because it was the application of a forced draft of air in a circuit, old in heating and ventilating patents, and there was no invention in substituting such old heating and ventilating patent structures as in an incubator where eggs were treated instead of some other material. Hastings insisted that this was invention. The Patent Office Primary Examiner and the Board of Appeals by a majority of 2 to 1, held it was not invention. One of the three members of the Board dissented and held that it was invention. The claim that Hastings appealed upon with the aid of an attorney, read as follows:

> "A hatchery for eggs embodying an incubating chamber adapted for the reception of superposed trays for eggs to be incubated, whereby said eggs will be arranged in layers one above the other, means for effecting a distribution of air uniformly to the eggs in the chamber, means for heating the air, and *mechanically operated means for forcing a uniform circulation of air* through all parts of the chamber and past the heater, whereby convexion currents will be eliminated, *temperature* and gaseous *stratification of the air in the chamber overcome*, and *the eggs subjected to the influence of air of the same temperature and composition.*"

The same problem that Smith claims he solved is disclosed in this application based on Hastings' statements, by his attorneys, Church & Church:

> "The problem presented to applicant was one which finds no analogy in the small incubators such as are commonly used throughout the country, for in them the chamber is of such small size and the eggs located so close together in a vertical direction that the disturbing influences due to convexion currents and air stratification amount to nothing. *It is well known that eggs during the process of incubation exert a very marked influence on the air surrounding them, as the temperature of the eggs themselves varies in accordance with the stage of their development* and the gaseous emanations tend to produce vitiated conditions which exert a marked influence upon the eggs themselves, and especially upon adjacent eggs, **if the eggs are at different stages of their development.** * * *" .

After stating, on May 24, 1912,[1] when they made these statements, that they had examined a mass of data and information, "derived from a practical hatchery of large capacity which is being operated by the applicant," they submitted that the applicant had "by a painstaking and very costly series of experiments discovered that the temperature and gaseous stratification in the incubating chamber must be overcome by a mechanically forced circulation of the air which will insure a correct and uniform influence of the air upon all of the eggs in the incubating chamber, and **this forced circulation must be such as to overcome the counteracting influence of the eggs upon the air when said eggs are in the different stages of incubation.** This feature has seemingly never been effectually worked out by investigators along this line prior to applicant, and it seems to the attorneys to present all of the characterstics of a patentable invention of the highest order."

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[1] The Muskogee prior use described hereafter was then an accomplished success.

And these same attorneys in their brief before the Board stated:

> "The problem has been to enable the incubating operations to be carried on continuously, if so desired, **with eggs at all stages of development,** and with all of a vast number of eggs subjected to the same temperature and atmospheric conditions best adapted for the development of the embryo. * * *
>
> "During the incubating process the eggs themselves, especially if assembled in large numbers close together, exert a most marked influence upon the surrounding air, both with respect to temperature and composition, and owing to their inherent temperature changes, they exert a most marked influence upon adjacent eggs due to radiation. * * *
>
> "* * * The simple way in which applicant overcame the difficulty was through the provision of a **mechanically operated air forcing means which would force a rapid circulation of air through the whole collection of eggs in the chamber and past the heater.** The mechanical air forcing means is an essential factor, if heat is to be conserved and the conditions maintained uniform; for a circulation, which is due to differences in temperature in different portions of the circulatory system, as, for example, where the air is circulated by the effect of the heater in causing the heated air to rise and pass into or through the incubating chamber, will not answer for large collections of eggs. * * *" (Vol. II, pp. 752-4.)

This brief was based upon and quotes disclosures by Hastings to the same effect.

This brief on behalf of Hastings by Church & Church would be a perfect brief on behalf of Smith. Compare Hastings' argument which he himself made before having an attorney, before the Patent Office, that prior ventilation patents were not analogous art, with the find-

ing of this Court.* Hastings, receiving the adverse two to one Board decision made March 11, 1913, had insufficient funds to carry the matter further. (Vol. I, p. 536.) If the Patent Office had rendered the same judgment as this Court, Hastings would have received the patent and not Smith.

At page 64 of petitioner's brief he tries to make it appear that Mr. Melville Church's reference in his amendment to the Hastings' application that "up to the present time, hatcheries of large capacity have proven to be practical failures," refers to the incubator of the Hastings application. This would make Mr. Church unfaithful to his task of prosecuting the application because, if accepted, it would mean that he was discrediting the then Hastings invention. That contention is without merit.

This abandoned application is relied upon as proof of the Hastings inventorship and use, under a doctrine

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***Hastings Filewrapper Statement on Prior Art.**

"These patents refer to the use of forced ventilation for purposes unrelated to incubation. The use of a forced draft in combination with an incubator I contend to be patentable, as it is a distinctly new use of a well known mechanical device, which in its new use required invention to reach and which has distinct utility.

"To contend that the new use is not patentable because passages for natural drafts exist in well known types of incubators is unsound; thousands of well known patents including the two cited by your examiner would be thrown out by a similar line of reasoning. There are scores of existing incubator patents based upon the form of these natural draft passages, and I maintain that the introduction of a device for generating a force draft to be of far greater uniqueness and utility than the varying designs for utilizing natural drafts." [Statement by Hastings in 1911 to Patent Office before he secured an attorney. Vol. II, p. 736.]

Supreme Court Statement on the Prior Art.

"The Proctor & Knowles patent, No. 426,321, of 1890, and the Schwartz Patent No. 535,175 of 1895, for methods and apparatus for conditioning tobacco and other materials, as well as other procedures for ventilation, are so remote from the problems and procedure for hatching eggs as to call for no comment." (Smith v. Snow, 294 U. S. p. 17.)

summarized by Walker on Patents, Sixth Ed., Sec. 98, p. 123, as follows:

> "Sec. 98. When there is evidence that he who made and abandoned an application for a patent, made also some effort to carry his invention into practical use, then that application is admissible in evidence to aid the court to determine the date and the nature of the invention which was sought to be embodied in a working form."

This Hastings application shows that the patentee Smith "was not the original and first inventor or discoverer or any material and substantial part of the thing patented." Rev. Sts. Sec. 4920, amended March 3, 1897, c. 391, Sec. 2, 29 Stat. 692. As this Court has said relative to the filing of an application as a showing of prior inventorship "one really must be the first inventor in order to be entitled to a patent. *Coffin v. Ogden,* 18 Wall. 120." In this same case of *Alexander Milburn Co. v. Davis, etc., Company,* 270 U. S. 390, 399-402, Mr. Justice Holmes observed:

> "A description that would bar a patent if printed in a periodical or in an issued patent is equally effective in an application so far as reduction to practice goes."

And in *Loom Co. v. Higgins,* 105 U. S. 594:

> "* * * An invention relating to machinery may be exhibited either in a drawing or in a model, so as to lay the foundation of a claim to priority, if it be sufficiently plain to enable those skilled in the art to understand it."

Hastings did not write out his description and make his drawings to keep them "in his portfolio uncommun-

icated to anyone," but he complied with the law by promptly seeking his patent through a vigorous prosecution of it before the tribunals of the Patent Office, despite his finances. He openly published his proposals in many publications before and after his application was filed. He showed large numbers of people in Brooklyn and Muskogee his reductions to practice.

The fact that Hastings was **prevented by the action of the Patent Office from securing a patent,** which, if it had been granted, would have prevented the allowance of the Smith patent, should not be held against Hastings, as that was the result of the Patent Office action, which was not his fault. In an analogous situation in *Alexander-Milburn v. Davis,* 270 U. S. 401, this Court said in dealing with the anticipatory effect of a prior filed application as showing lack of inventorship and as showing constructive reduction to practice:

> "* * * The delays of the Patent Office ought not to cut down the effect of what has been done. The description shows that Whitford was not the first inventor. Clifford had done all that he could do to make his description public. He had taken steps that would make it public as soon as the Patent Office did its work, although, of course, amendments might be required of him before the end could be reached. We see no reason in the words or policy of the law for allowing Whitford to profit by the delay and make himself out to be the first inventor when he was not so in fact, when Clifford had shown knowledge inconsistent with the allowance of Whitford's claim, * * *"

In the *Milburn* case, the earlier filed application matured into a patent without the claim to the subject-matter in controversy, but the principle remains the same that this Hastings application would have been issued if the Patent Office had taken the same view of the law on the

prior art that this Court later said was the correct one. We rely upon the Hastings application because it negatives inventorship in Smith, the Corn Planter Patent, 90 U. S. 181, 23 Wall. 181; because it is proof of a constructive reduction to practice establishing the date of invention, and is corroborative of the nature and fact of the invention which Hastings reduced to practice in Brooklyn and Muskogee.[1]

Therefore, the Hastings application is a constructive reduction to practice, corroborating proof not only of the actual reduction to practice by Hastings, but also in its own right a constructive reduction to practice. It is proof of prior inventorship under Subdiv. 4, Sec. 4920 R. S. as evidence that the patentee Smith "was not the original and first inventor or discoverer" of the incubator and method patented.

(D) Hastings Muskogee, Oklahoma, Prior Use.

In the fall of 1911 Hastings went to Muskogee, Oklahoma, during the boom in that territory, soliciting aid to build a mammoth incubator embodying his ideas of forced draft and stage incubation. In company with John G. Lieber, a lawyer and business man of Muskogee, and a third party named Ed. Hastain, a corporation was formed and a 30,000 egg capacity incubator built in Lieber's building during the latter part of 1911, was put in operation early in the hatching season of 1912 and ran through that season and the hatching season of the next year, 1913, as well. (Vol. I, pp. 512-607.) The same principle of forced draft and staged incubation was employed in the Muskogee as in the Brooklyn incubator,

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[1] Miller v. Walker (C. C. E. D. Pa.) 138 Fed. 919, 920, 922; U. S. Blind Stitch, etc., v. Reliable, 67 Fed. (2d) 327 (C. C. A. 2); Lemley v. Dobson-Evans Co., 243 Fed. 391 (C. C. A. 6), affirmed Milburn v. Davis, 270 U. S. 390.

but on a larger scale. Hastings testified: "The general plan of construction and the principle of operation [of the Muskogee incubator] were quite similar and in accord with those of the Davis incubator, such changes as were made were wholly the matter of expediency in adapting the construction of the building space available and because of the larger capacity of the Muskogee incubator." (Vol. I, pp. 512-3.)

There is no rebuttal in the record as to these facts: that this incubator existed, was operated with staged incubation and fan draft, hatched during one season and part of another and was constructed as claimed. The depositions of the petitioner, Anderson, Lieber (also called by respondent), Hogan, Pitts, and Shanafelt, Cory and Ward (Vol. II, pp. 765-791; Vol. I, pp. 644-662), prove the building and operation of this Muskogee incubator. Petitioner's witness Samuel J. Ward, after saying that the Hastings incubator produced about a fifty per cent hatch, said:

> "I am positive that from my visits to this plant where Mr. Hastings was operating, that the thing was actually in operation and did hatch eggs, regardless of the percentage of the hatches. Yes, sir. And that was throughout the hatching season of the two seasons that I remember, and I think it was in 1911 and 1912."[1]

Photographs were taken at the time of this prior use and articles appeared in newspapers and technical publications carrying these photographs, describing this incubator, so that its operation and existence does not depend upon unsupported verbal testimony, but upon unusually full dated documented proof to a degree far

[1] Rec. Vol. I, p. 661.

beyond the record before any other Court considering this prior use.

In addition to Hastings' own testimony, the writer of some of the articles, Norman B. Hickox, who was commercial manager for the local electric light and power company in Muskogee at the time, and A. D. Peabody,[1] who was the electrical contractor who installed the electrical equipment of the incubator including the fan and blower, were called and testified. Hickox produced his own scrapbook of photographs made under his direction, a description drawn up by him at the time, and articles written by him in 1912,[2] and photographs of the fan, installed in the incubator are also in the record. The second blower to increase air flow was produced and photographs are in this record.[3] John G. Lieber, L. W. Pitts, C. T. Brewer and Van D. Campbell testified as to being familiar with the Hastings Muskogee incubator, that it was an operative machine and was run through two hatching seasons producing commercial hatches. We reproduce here photographs from the Hickox album taken in 1912 under Hickox's direction showing this incubator in actual operation at that time.

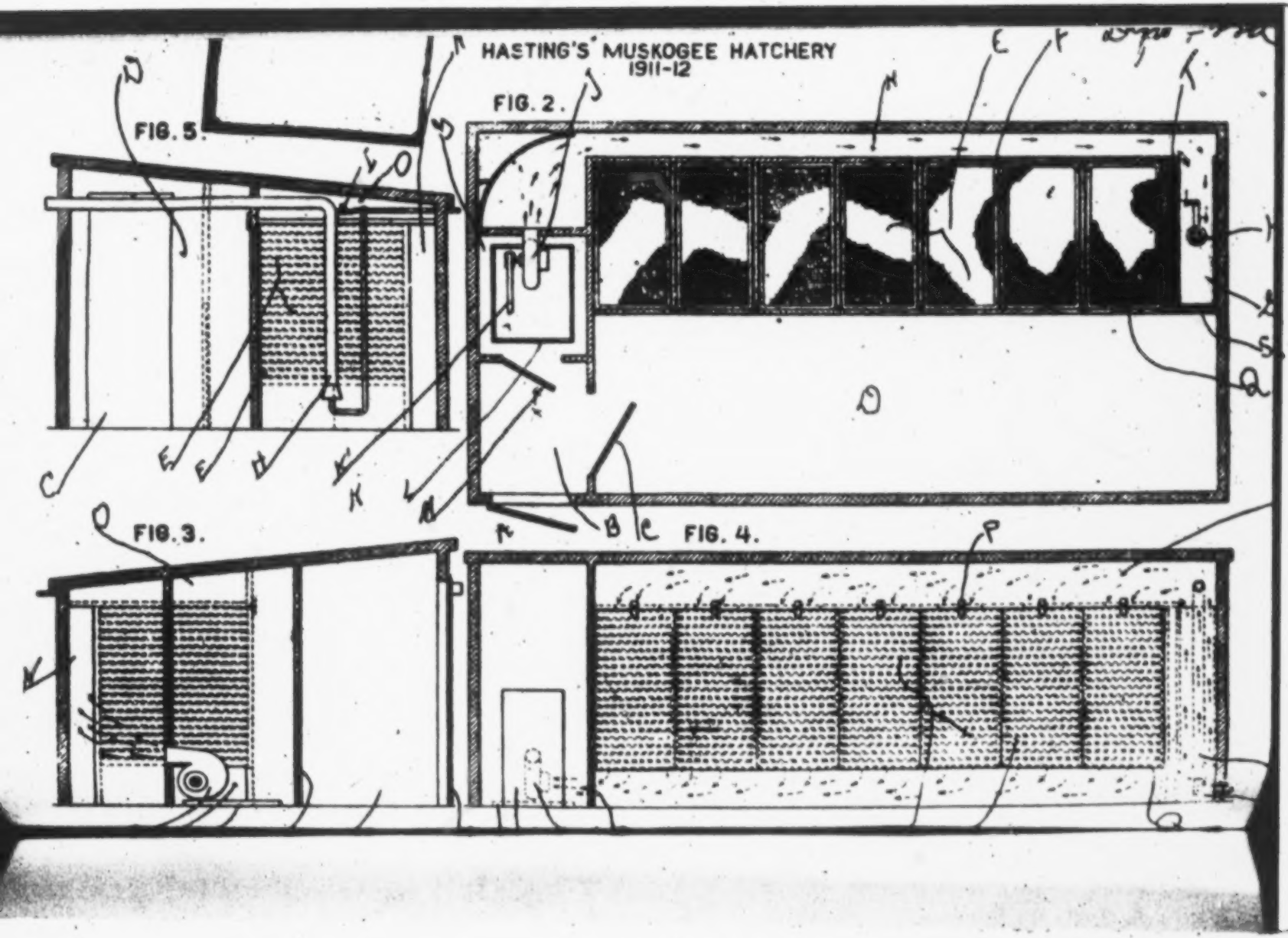
Based upon the photographs and published descriptions published at the time of the operation of the Hastings Muskogee incubator, assembly drawings were made up, showing the complete machine as embodying forced draft circulation and staged incubation.[4] These drawings are identified as correctly showing this incubator by Hastings, the inventor of the construction, Lieber who furnished the money to build it, and Pea-

[1] These are new witnesses identifying new contemporaneous photographs and descriptions. They have no interest in the outcome of this suit.
[2] Defendant's Exhibits 26, and 26A to 26G, Vol. II, pp. 1121 to 1130.
[3] Vol. II, pp. 1113-14, Exbs. 22B-22F.
[4] Defendants' Exhibits 22 and 22A, Vol. II, pp. 1111-12.

body, the electrical contractor who put in the fans and other electrical work. Hickox testified he saw it in operation and had photographs taken of it in operation as a part of his duties and produced them with a description written at the time. (Vol. I, pp. 503-605.)

The testimony of these witnesses stands uncontradicted and agrees that the Hastings Muskogee incubator consisted of a large room in which there were a series of stacks of egg trays containing from 250 to 300 eggs per tray, each stack containing about 5,000 eggs of different ages. There was a corridor in front of the trays for men to work in, loading and unloading the trays. Moisture was provided by water pans. A fan blew an air blast over the water pans and thence through a passage behind and over the tray stacks and thence downwardly through the stacks of egg trays and back into the fan in a continuous circuit. This fan was made by the Emerson Electric & Manufacturing Company, with a normal speed of 1150 r.p.m. (Vol. I, p. 600.) The fan was found to give insufficient air, according to Hastings and the electrical contractor, Peabody, and a larger Sirocco blower made by the American Blower Company was substituted.

This blower has been found and photographs taken of it and the blower identified. (Defendants' Exhibits Nos. 22B and 22F, Vol. II, pp. 1113-14.) This was the Sirocco blower Smith tried to buy in 1926 because Smith knew of this prior use as his man Taggart admitted and wanted possession of this blower. He offered fifty dollars for it. (Vol. I, Lieber, p. 610, and Taggart, pp. 663-4.) Taggart admitted on cross-examination: "I first learned of the Hastings incubator being operated in Muskogee, I think in the spring of 1923. I learned of it in conversations with Dr. Smith." (Vol. I, p. 664.)

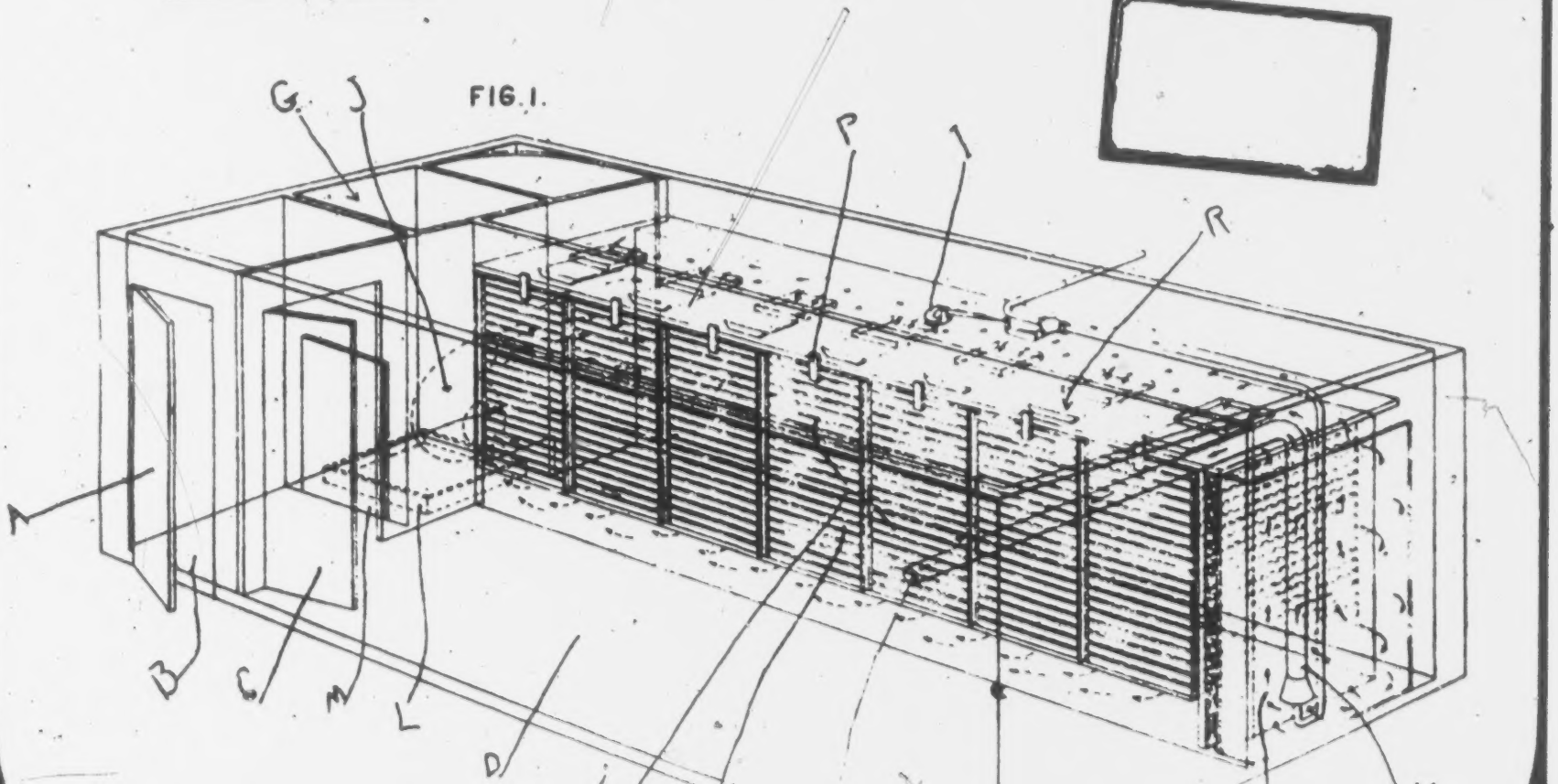

HASTING'S MUSKOGEE HATCHERY
1911-12
FIG. 2.
FIG. 3.
FIG. 4.
FIG. 5.

DEFENDANT'S EXHIBIT No. 22

HASTING'S MUSKOGEE HATCHERY
1911-12

Defts' Exhibit no 2

FIG. 1.



We reproduce Respondents' Exhibits 22 and 22A, drawings of Hastings' Muskogee incubator.

A door entered into the hatchery as shown on the drawings, marked "A." This led into an ante-chamber marked "B." A further door marked "C" led into a work room or corridor marked "D," where the workmen stood to handle the eggs and trays. The incubating chambers, of which there were seven, are indicated by the letter "E" and were separated by vertical partitions to guide the air downwardly through the eggs where it mushroomed on the floor and then returned to the fan or blower "J." The individual trays that slide into these chambers are marked "F." A chamber marked "G" contained a blower marked "J." At the opposite end of the hatchery is another chamber marked "G-1" which contained the heater marked "H." A thermostat marked "I" was also installed for the purpose of regulating the heat. A moisture pan marked "L" was located in the blower chamber. A passageway behind the incubating compartments, through which the air from the blower passed, is marked "N" and a passageway through which the air also passed and was distributed to the seven individual hatching compartments is marked "O." The circulation of the forced draft current of air impelled by the blower is shown by arrows. Openings with movable slides, marked "R," led from the chamber "O" into the seven individual hatching or incubating chambers. The purpose of these openings and the adjustable slides was to permit of the equal distribution of air from the forced draft of the blower to the individual hatching chambers and the slides were for the purpose of adjusting the flow of the air to each hatching chamber as operation required because the blower was at one end of the building. (Vol. I, pp. 514-5.)

The manner and method of the operation of this incu-

bator provided for the distribution of the heat to maintain equal temperature throughout all egg chambers and was carried out by means of the forced draft of air as propelled by the blower past the heater and distributed in the long chamber marked "O" to the incubating chambers marked "E" containing stacks of egg trays. In these stacks the air, which entered at the top, was driven by the forced draft vertically down through the egg trays and was returned by an open space beneath the trays for the fan or blower, from which the circuit passed the heater or continued on a complete continuous circuit. The accuracy of this drawing representing the machine as described in the publications and illustrated by the photographs, is testified to by Hastings, Lieber and the electrical contractor, Peabody, who installed the fans and electrical controls, and is verified by Hickox's photographs, description and testimony.

Hastings compared the drawings, Exhibits 22-22A (Vol. II, pp. 1111-12) with the Hickox photographs, Exhibit 26C (Vol. II, p. 1126), saying:

> "The photograph showing the fan shows the chamber which, in the drawing, is marked 'G,' and it also shows on (fol. 746) the floor a moisture pan, which in the drawing is marked 'L.' The fan shown in the photograph is the one which I have described which was first installed. The drawing shows, in the same chamber (G) a blower which was used to replace the fan which was first installed and which is shown in the photograph.
>
> "Q. What as to the other photograph?
>
> "A. The other photograph is a photograph of the chamber, which in the drawing is marked 'D.' It was taken by a camera which was located in or beyond the doorway at 'C,' and shows the fronts of the incubating compartments with the six of the removable panel doors which in the drawings are

RESPONDENTS' EXHIBIT 26-C

Hickox Photograph: shows a water pan "L" under the fan or blo
er "J" in fan chamber "G": fan is blowing air into passagew
"N" to descend into trays "F": see Exhibits 22-22A.

RESPONDENTS' EXHIBIT 26-D

Hickox Photograph: corridor "D" in front of the stacks of eg
trays "F" drawn out partially from the stacks "E": see Exhibit
22-22A.

marked 'Q' in place and the one removed. At the top of these panels in the photograph are the buttons which are indicated in the drawing and marked 'P.' In the background of the photograph is shown a stovepipe crossing the rear of that chamber, which is the stovepipe or exhaust from the heater which is marked 'U' in the drawing.

"The figures 2 and 3 appearing in the photographs are numbers that are placed on those doors or panels and above the spaces where they go, merely to indicate which door fits in which panel, as they were individually made and some didn't fit in other places quite, due to roughness in carpenter work." (Vol. I, p. 524.)

Lieber said these drawings were "about as near a drawing of the incubator as it was set up as you could get without taking an actual photograph. Of course, the—it may not run true as to size, etc., or inch or quarter inch, or whatever you might call it, or as to scale, but that is approximately like it was set up after the blower was set up." (Vol. I, p. 604.) Peabody identified the drawings and the photographs as correct. (Vol. I, p. 600-1.)

(E) Hastings Publications as to His Prior Use.[1]

A photograph of this motor driven fan in the incubator, and the interior of the incubator, with this description, appeared in "Electrical World," July 6, 1912. (Defendants' Ex. 25; Vol. II, p. 1120.)

"Muskogee, Okla., has a 30,000 egg incubator, the heat control and air circulation for which are effected by electrical means, while the growth of the chicks is artificially forced by tungsten electric

[1] These publications are pleaded as anticipatory as publications in their own right (Vol. I, p. 10) and as corroborative of the Davis and Muskogee prior uses of Hastings.

light. Use of motor-driven blowers to circulate the air heated by natural-gas burners has made possible the compact construction of this hatchery, the egg trays of which are superimposed on racks twenty deep. Five thousand eggs can thus be handled and hatched in a space of 2 ft. by 4 ft. by 4 ft., requiring only about one-tenth of the volume demanded by the old style incubators. After hatching has begun trays with high sides are substituted for the incubating trays, each high-side tray occupying the space of two of the ordinary trays.

"Although the idea of converting the whole building into a hatchery, with superimposed open trays for the eggs, is not new, according to Mr. Norman H. Hickox, contract agent for the Muskogee Gas & Electric Company, the use of a motor-driven blower at Muskogee to force the evenly heated air to all parts of the tray racks has for the first time made this method practicable on a large scale. Humidity of the air is controlled by passing it over open pans of water, as shown in Fig. 2. A home-made thermostat controls the natural-gas supply to the burners through a mercurial valve, keeping the temperature in the incubator constant at 100 deg.".

Hickox stated in his typewritten original article pasted in his scrapbook and written in 1912 with reference to the photographs he had taken:

"* * * The large capacity is attained by superimposing twenty trays, one above the other, so that 5,000 eggs fill a single chamber measuring about 2 by 4 by 4 feet. * * *

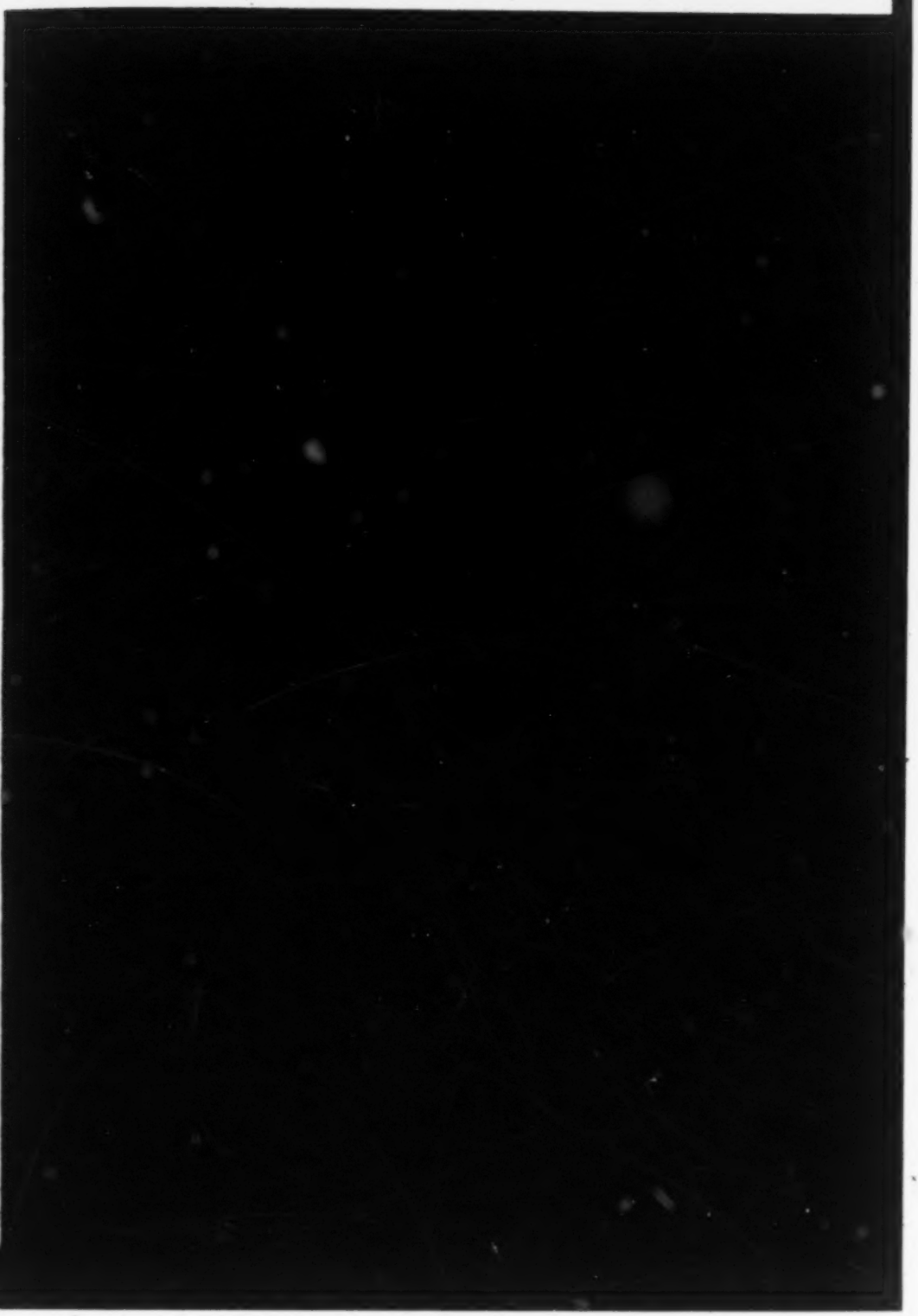
"It is a very simple idea, that of placing the trays one above the other, and like all other simple ideas it has been tried before, but failed to work on account of the fact that it was hard to heat up such a large mass of eggs and maintain the temperature constant at all points. This was overcome, however, by the use of an electrical centrifugal fan,

RESPONDENTS' EXHIBIT 26-F

Hickox Photograph: hatching eggs three stacks from the end showing eggs not hatched at one end only.

RESPONDENTS' EXHIBIT 26-D

Hiskox Photograph: trays of eggs with some eggs unhatched; some eggs hatching and some trays removed: stage incubation in a stack.



RESPONDENTS' EXHIBIT 26-C

Hickox Photograph: handling eggs third stack from the end.

which drives a blast of warm air through the mass of eggs from top of [to] bottom and heats the entire mass of eggs (or cools it) at the will of the operator. The amount of moisture in the air is governed by the moisture introduced at the fan, as is shown in Fig. 2. * * *

"Outside air can be admitted to this compartment whenever necessary. This also shows the pan of water underneath the fan, to keep the moisture in the air at the right amount. This fan is supplied by central station service, and the owner of the incubator keeps a duplicate on hand at all times to immediately put in place should a break-down occur. As a stoppage of ventilation would make it necessary to throw away all the eggs in the incubator and start over again, it will be seen that the dependability of the central station service is the biggest point of the whole process.

"From here we enter the main incubator, in which the temperature is always kept at 100 degrees. * * *" (Vol. II, pp. 1121-2.)

In the Hickox album were the original photographs he had taken in his presence of the motor driven blower "J," the superimposed egg trays "F," which slide in the incubator chambers "E." Hastings is shown in the work chamber "D." (Respondents' Exhibits Nos. 26, 26B-C-F.)

Lieber testified on behalf of the petitioner that as high as 25,000 eggs were in process of incubation at one time in the Hastings' Muskogee incubator. (Vol. II, p. 773-4.) He said they had from 1,500 to 2,000 individual customers. (Vol. II, p. 775.) Numerous witnesses for both parties testified as to the constant visits of people bringing eggs and taking away chicks. (Vol. I, pp. 639-40, 642-3, 657, 659-661; Vol. II, pp. 769, 773, 786, 789.) Hickox so testified. (Vol. I, pp. 593-4.) Peabody said,

"I saw the incubator itself in operation." (Vol. I, p. 600.)

It is apparent that the eggs in this incubator were of different ages; and petitioner does not, we understand, deny it.

Hastings testified that eggs of different ages were being set and hatched.[1] The photographs, such as the Hickox photograph A, Exhibit 26, show chicks that are being hatched where the paper walls around the trays retain the chicks and unhatched eggs appear in other trays. Hastings testified that the eggs were of different ages in the same stack of trays. Lieber testified that they could be put either way, that is, either all eggs of one age in each parallel stack of trays, or of different ages in a single stack of trays. (Vol. I, pp. 517-18, 535-6; Vol. II, p. 782.)

Hastings testified:

> "I did not operate this incubator at Muskogee with eggs of one age in a single compartment, not a full compartment of eggs of an age. As to whether I ever operated it with eggs of one age only in a single compartment, I did, because a single tray in the test hatch would have been that. Whether, disregarding the demonstration hatch that I testified about, we ever operated the incubator at Muskogee with compartments in which the eggs of one age were placed in one compartment only, we never operated with eggs of the same age put in one compartment so as to materially fill the compartment. The practice was to keep eggs of different ages distributed throughout the different compartments, which aids in the equalization of the incubating chamber. I have no memory of testing this

[1] Hastings said in this testimony that the time of setting, i. e., how often, was not material; respondent tries to misconstrue this statement into his saying that stage incubation was not material.

RESPONDENTS' EXHIBIT 26-F

Hickox Photograph: air openings at top of stack of trays.

RESPONDENTS' EXHIBIT 26-B

Hickox Photograph: candling of eggs with control instruments in the foreground.

incubator at Muskogee with a compartment filled with eggs of one age. I do not deny that I did.

"The slides provided in the top of the chambers were installed for the purpose of regulating the flow to the different compartments, but finding that the air flow was sufficiently distributed among the several compartments, the practice was, when operating to anywhere approximating full capacity, to keep all slides full open. The purpose of the slides was that of distributing the air flow." (Vol. I, p. 559.)

Air was driven in a blast from a common source and distributed downwardly through each stack of trays and then returned to a common stream of air whence it was returned to the fan for delivery in a continuous circuit. However, it is immaterial whether the eggs were all of one age in each stack of trays or of different ages. It is immaterial to this issue whether a different temperature was present in one stack of trays as compared with another, because a continuous circuit of the same body of air by which all air from all stacks of trays was mingled and returned to the top of all trays would bring about the transfer of heat from the hotter eggs to the cooler eggs by the transmission of the heat to the common body of air in the continuous circuit. This would bring about uniform temperature and equalize it.

This Court has said in interpreting this patent that the exact order of arrangement of the eggs or the direction of the air with reference to the age and heat of the eggs was immaterial, saying:

"* * * The specifications and claim both contemplate a continuous circulation of the current of heated air through the chamber, which, regardless of its direction, would continuously operate, by repeated contacts with the eggs in all stages, to equalize the temperature throughout the chamber by

carrying heat units from the warmer to the cooler eggs. * * *

"* * * Such continuous circulation of the air at constant temperature, lower than that of the more advanced eggs and higher than that of the less advanced, tends to produce the equalization of the temperature of the eggs by flow of heat units from the warmer eggs to the cooler, regardless of the direction of the current in the circuit, and regardless of the particular stage of the eggs which it reaches first." *Smith v. Snow,* 294 U. S. 1, 12, 13.

We believe this description adequately describes the Hastings Muskogee incubator and its operation, whether the eggs in the stack of trays in each column are of the same or different ages. Hastings' common air stream was subdivided as it passed downwardly through the separate stacks, was reconsolidated at the bottom for re-delivery by the fan again into the tops of the stacks of trays, effecting that very objective by a continuous circulation of a blast of air that Smith had in mind, namely, a current of heated air of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature so that the units of heat will be carried from the eggs of the more advanced stage of incubation to those in a less advanced stage. The temperature was 103 degrees inside. (Petitioner's witness Pitts, Vol. II, p. 789.) This continuous circuit of air blown over the moisture pan would conserve the moisture just as in the Smith patent. The opening and closing of the doors allowed fresh air to come in and foul air to escape. (Vol. I, pp. 629, 659, etc.) Smith's patent recognizes a variation of 5° in the temperature and Hastings also found the temperature would tend to vary with the egg ages.

In the Smith patent the vertical partitions separating the stacks of egg trays direct the current of air vertical-

ly through the columns of egg trays and likewise in Hastings the partitions between the stacks of trays guide the vertical movement of the common body of air in separate streams, which common body of air, as in the Smith patent, after passing through the stacks of trays, is reconsolidated and mixed in the fan and then recirculated in a continuous circuit.

The Hastings' Muskogee incubator was not financially successful because an attempt was made to do custom hatching for those who supplied eggs to the hatchery at the impossibly low price of one cent an egg. But the operation of the incubator itself was successful in that it hatched satisfactory percentages of the eggs set in it when the eggs were of normal fertility. Hastings testified:

> "The quality of hatches in the Muskogee 1912 incubator were very highly variable and rated all the way from complete failures of small lots, to back lot winter eggs that were brought in by local poultrymen, to excellent hatches that were secured from eggs of a good hatching quality provided by more skilled poultry men. I best recall the hatching percentages of white leghorn eggs that I purchased throughout that hatching season from a man named Gaunt who resided at Benton, Arkansas. I found from an early trial of these eggs that they were good hatching quality, and, hence, for the purpose of producing chicks for sale, we bought throughout the season an average of two cases a week, and these eggs hatched uniformly well throughout the season, and the hatching percentage never fell, with the Gaunt stock, below 70 per cent of all eggs purchased." (Vol. I, p. 519.)

Lieber testified for respondents:

> "* * * it hatched thousands of eggs into chicks * * *. My recollection is that it ran from

nothing in some cases to as high as 75 and 80 per cent in other cases." (Vol. I, pp. 606, 607.)

Lieber **also testified for petitioner,** who called him:

"* * * The result was that he was swamped with business. He had at the one time that I remember, about 25,000 eggs in the incubator, many of them belonging to individuals who had only one setting of eggs, or about 15, in the hatchery. I judge there must have been something like 1,500 or 2,000 different people who had eggs in the hatchery at that particular time. He was supposed to keep each [fol. 1061] fellows eggs separate. But with the work he was endeavoring to do himself, it was a physical impossibility for him to keep track of the various batches of eggs. The result was that one fellow who brought plymouth rock eggs would get Rhode Island red chicks. And so on, through the whole 1,500 or 2,000 individuals. * * *.

"Q. **Are you positive that you secured at least a 50 per cent hatch?**

"A. **In some cases more than 50 per cent.** Some folks had just as well had door knobs in the hatchery, so far as the chicks they obtained from their eggs. Some of them got none. But I do remember that the incubator hatched what was regarded *as* that year as an average hatch.

"Q. Was there any difference in the hatches at different times during the year?

"The only difference that I remember of was that the first hatch was extremely low, and Milo Hastings attributed it to the ordinary exhaust fan, which was being used to circulate the air. After the blower was substituted for the exhaust fan he got average hatches from the incubator." (Vol. II, pp. 774, 775, 782, 783.)

Hickox testified:

"I probably visited the Hastings' incubator five

or six times. Muskogee was a very active, growing city; people were coming in all the time, establishing their homes, establishing businesses. And so far as the Hastings business was concerned, to my recollection every time I was ever there there was business being done. People were either bringing eggs to be hatched or were taking away baby chicks, as I recollect it, from their own eggs or were purchasing baby chicks that were being sold there as freshly hatched." (Vol. I, pp. 593-4.)

Petitioner's witness, Hogan, testified:

"Q. Did you have any experience or business dealings with the hatchery?

"A. Well, I bought baby chicks from them.

"Q. How many did you buy?

"A. I could not say, it has been so long.

"Q. Do you remember the price you paid?

"A. No, I could not say, I just remember getting the chicks. I was there several times, I could not say just how many, just a few, probably fifty." (Vol. II, p. 786.)

L. W. Pitts, now a retired government clerk, living in Muskogee, Oklahoma, said that during the years 1911, 1912 and 1913 he was connected with the Indian Agency and was engaged on a small scale in the poultry business operating small incubators. He testified that he recalled distinctly the Hastings Muskogee incubator and that it was in operation in Muskogee during the hatching season of 1912 and 1913. He visited this incubator on several occasions, one time being a visit paid by the Poultry Association of Muskogee during the hatching season of 1912, when the Hastings incubator was in operation. (Vol. I, pp. 634-5.)

In Pitts' deposition for petitioner, introduced from the *Stone* case, he testified:

"A. Yes, I remember it so well, because it was zero outside and when we were in there it was 103.

"Q. Do you remember how the air current, or currents, were formed?

"A. I know that he used a fan." (Vol. II, p. 789.)

C. T. Brewer, now a retired United States Post Office employee living in Muskogee, Oklahoma, where he has resided for thirty-two years, testified that Hastings built the Muskogee incubator and that it was operated in Muskogee as a commercial hatchery during approximately the years 1911 or 1912. He had as many as two or three hundred eggs hatched in this incubator himself, and, in addition to the eggs which he had hatched he sold in the neighborhood of one thousand eggs to the company operating the Hastings incubator for commercial hatching. (Vol. I, pp. 638-41.) Brewer said:

> "As to the results of the eggs which we turned over to be hatched ourselves, well, we considered it fair results, good results, satisfactory. * * * from 70 to 75 per cent of the eggs which we turned over to them would be hatched chicks." (Vol. I, p. 640.)

Van D. Campbell and his wife operate now the Marathon Hatchery in Muskogee, Oklahoma; he is familiar with the hatching business, is a carpenter and has installed incubators. He came to Muskogee from Kansas in 1911 when he was 20 years old and recalled the Hastings incubator in Muskogee. He saw the incubator in actual operation and he and his family had eggs hatched in this incubator. "It was a brick floor, I think, and he had some kind of a circulating system, and he had chickens hatching in there, thousands of them; * * * You opened a door and walked right in and there were chickens and trays there of eggs. * * * Was a ter-

rible roar in there. I know it had some kind of fans." His testimony was that "I know that it hatched chickens." (Vol. I, pp. 642-3.)

The following witnesses were *called by the petitioner* to testify in this case, in connection with the Hastings incubator in Muskogee during 1912 and 1913: Cory, Shanafelt, and Ward.

Cory testified that he was in Muskogee at the time Hastings had his incubator and that he was acquainted with him. He saw this incubator in actual operation and that it continued to be operated throughout the whole hatching season of 1912 under Hastings supervision and that it likewise was operated throughout the next season by Hastain. Although he did not obtain any hatches from the eggs which he placed in the incubator, he testified that he thought at the time that some of his eggs were hatched, but that Hastings was operating a chicken farm a little north of Muskogee, and his opinion was that Hastings had taken the chicks that were hatched from his eggs and put them out on his chicken farm. He further testified that the Hastings hatchery was "well patronized by people interested in the poultry industry at that time." He said: "I went on the inside of the hatchery a few times. I saw it then in actual operation. I can't tell from memory how long it continued to operate. I don't know. Well, it is my opinion that it operated throughout the whole hatching season of 1912." He said he saw a fan used for circulating the air. (Vol. I, pp. 646-7.)

Cory was raising chickens at this time himself and selling eggs for hatching purposes to others. He admitted that he had received several complaints from others to whom he had sold eggs as to the eggs not being fertile and not hatching. (Vol. I, p. 645.)

Shanafelt, during 1911, 1912 and 1913, lived in Muskogee, Oklahoma, and was interested in poultry raising at that time. He became a customer of the Hastings hatchery and took approximately 200 eggs to be hatched and obtained very poor results. However, it develops that when Shanafelt took his eggs to be hatched in the Hastings incubator it was being operated with the exhaust fan and not with the blower. He never turned over to the Hastings incubator but one batch of eggs to be hatched and he saw the machine in actual operation and knew that it hatched some chickens, and that the machine was operated throughout the hatching season of 1912. Also that after Hastings left, Hastain continued in the operation of the incubator. (Vol. I, pp. 654-5.) Shanafelt testified that Hastings' method of operating this incubator, in the way he handled eggs, was very unbusinesslike and that some customers would turn over to him eggs of one breed to be hatched, and, on account of the methods of Hastings in the handling of the eggs, would be given chicks of a different breed from the eggs which they had turned over to him. Shanafelt had a small flock of hens himself and was unsuccessful in getting a good hatch of chickens.

> "I know that he did actually hatch chicks in that incubator, regardless of the percentage of the hatch. I am sure, at that time, I got—seems to me it was two or three chickens out of my batch that were white chickens and I was breeding black chickens. I know it hatched some chickens." (Vol. I, p. 654.)

Ward lived in Muskogee, Oklahoma, from 1911 to 1913 and was a salesman for the Binding Stevens Seed Company, selling seeds, poultry feed, incubators and supplies. He recalled the Hastings incubator and was in the place of business of the Hastings Muskogee Hatcher several times. He testified that the first hatches

which Hastings obtained only ran from five to twenty per cent of the fertile eggs, and that Hastings changed or remodeled his incubator and got better hatches.[1] He admitted that the Hastings incubator was operated through two hatching seasons, but was under the impression that those seasons were 1911 and 1912. The only change or remodeling of the Hastings incubator which he knew of was a change[1] in the location of the exhaust fan and he was positive that the Hastings incubator was actually in operation and did hatch eggs throughout the hatching season of two years. (Vol. I, pp. 657-8.)

Petitioner's witness Anderson admitted that the Hastings incubator at Muskogee was in operation for a year or more starting in January or February, 1912, and extending over until 1913. (Vol. II, p. 769.) Hastings had gone in 1913 to build a larger incubator in Texas; Muskogee lacked his skilled supervision and suspended after 1913 because not financially successful. "It hatched all right," said Lieber. (Vol. I, p. 622.)

Taggart, an officer and agent for the plaintiff, testified that in 1926 he undertook to buy from Mr. John G. Lieber the "Sirocco" blower used in the Hastings incubator of 1912, his interest in buying it, "being based upon the assumption that it had been used in the Hastings incubator in 1912 and 1913 at Muskogee" and he was trying to get together duplicates or reconstructions of early methods of incubation. **He admitted having offered fifty dollars for this blower and that Doctor Smith of the Smith Incubator Company knew in 1923 that there had been an incubator started in Muskogee in 1912 and 1913.** (Vol. I, pp. 663-4.)

The witnesses for the petitioner admitted that it was

[1] The change was the substituting of the Sirocco blower for the Emerson exhaust fan.

operated in Muskogee throughout these two hatching seasons. The testimony of Shanafelt, Cory and Ward, as to poor hatches that were obtained, all related to the incubator as originally installed with the exhaust fan as the means of providing the forced draft circulation of the heated air. *There is no testimony from any witness of any mechanical failure of the incubator to operate, in securing successful hatches of eggs, after the substitution of the Sirocco blower for the fan in the incubator.*

Hickox's photographs and articles corroborate the description given by Hastings in his testimony and corroborate the illustrative drawing showing the complete incubator. Peabody, the electrical contractor, said of the illustrative drawings, Exhibits 22 and 22a: "represents the general scheme that was employed in supplying warm fresh air for this incubator." As to the success of the incubator Peabody testified: "I know that incubator was actually used and placed in operation. * * * I did not hear any criticism either of Mr. Hastings personally or the operation of that incubator." (Vol. I, p. 600-1.)

Hastings next season went to Port O'Connor, Texas, to promote another incubator of larger size, but was unsuccessful in getting the backing of the community. This proposal, based upon his Muskogee work is pictured and described in "Technical World," Def. Ex. No. 12:

> "One of the unique improvements in the Texas plant is a turning system, by which compartments holding 10,000 eggs are swung on a pivot and the eggs turned by inverting the entire compartment. This enables one man to turn 100,000 eggs in less than two minutes. These eggs are ventilated and maintained at an equal temperature by an eight hundred pound centrifugal fan, requiring four horsepower to operate it, and the temperature is

> regulated to a tenth of one degree, while water sprays regulate the moisture to a similar nicety."

This Port O'Connor hatchery was not fully completed —the statements as to it were based partly on what happened at Muskogee and what was expected to happen at Port O'Connor. (Vol. I, pp. 573-4.)

There is no rebuttal by petitioner of the existence and operation of the Hastings incubator at Muskogee. There is no rebuttal of the fact that there was stage incubation and a continuous forced draft of a body of air passing over eggs of different stages repeatedly so as to transfer the heat from the hotter eggs to the cooler. The only complaint is as to the commercial success in a financial way and whether all of the hatches of the eggs were of commercial quantity. The witnesses called by the petitioner devoted themselves to saying that the hatches at most secured by Hastings were not more than 50 per cent and that commercial hatches should be as high as 70 or 80 per cent. This is rebutted by their own witness Lieber, who later testified that the average was 50 per cent and that some of the hatches ran from 70 to 80 per cent. Hastings and others testified as to the success of the hatching. (Vol. I, pp. 520, 607, 640; Vol. II, pp. 773, 783.)

It would seem to be immaterial as a matter of anticipation whether this percentage was an average of 50 per cent or the maximum of 70 to 80 per cent for a highly successful commercial hatchery. We do not know of any early installations of an invention that achieved full commercial success in their initial stages. This Court so found in the Telephone Cases, as well as many others. "The law does not require that the discoverer or inventor, in order to get a patent for a process, must have succeeded in bringing his art to the

highest degree of perfection." *Telephone Cases*, 126 U. S. 1, 536.

Complaint is made that the air speed mentioned in the Hastings file wrapper was only about 30 feet a minute and that this was insufficient to constitute an anticipation of Smith. The Smith patent does not specify any particular air speed. It generally specifies that it must be sufficient to carry the heat from a hot egg to a cool egg to accomplish the result. The proof shows that the Hastings machines did have blowers for that purpose and that the air was so carried and the results were successful hatches—nothing more is required.

In this case the petitioner claims that the respondents' machine is an infringement. The respondents' machine has air speeds many places in its trays of eggs 30 feet *and less* according to petitioner's own tests in its own exhibits. (Petitioner's Ex. 24.)[1] Therefore, if the Hastings speed of 30 feet a minute is insufficient, it is quite obvious that petitioner's charges of infringement should likewise fail.

Thus, this Muskogee incubator was actually built, installed and operated for two years—that is, the two hatching seasons for the years 1912 and 1913. Its construction and operation and the results were testified to by Hastings, Hickox, Peabody, Lieber, Pitts, Brewer and Van D. Campbell. Petitioner's witnesses testified to the same effect: Cory, Shanafelt and Ward.

The objections the petitioner makes to this testimony are these:

That the construction of this incubator is uncertain, resting on oral testimony without the benefit of contemporaneous memorandum; that Hastings in this in-

[1] See a summary in this brief of these tests at pages 64-5.

cubator was proceeding along an entirely different way from Smith and finally that Hastings' efforts resulted in financial failure, his incubator only operating through two seasons.

In answer to these propositions we direct the Court's attention to the contemporaneous corroborating documents, consisting of photographs taken of the incubator itself at the time of its operation in 1912 and articles describing it published at the same time, such as Defendants' Exhibits 22B to 22F inclusive, Vol. II, pp. 1113-14, Defendant's Exhibits 23, 24, 25, 26A to 26G inclusive, Vol. II, pp. 1115-1130, supporting the oral testimony of the witnesses and the Hastings' filewrapper.

As to petitioner's claim that Hastings' Muskogee incubator operated along different lines from the Smith alleged invention, there is no doubt on this record but that Hastings used staged incubation along with forced draft circulation. Lieber testified that Hastings had his egg compartments so arranged that he could keep all eggs of one age in one stack and eggs of another age in another stack or eggs of different ages in the same stack, and that the temperatures in the stack could be kept different and the eggs moved from one stack to another. But even this witness said: "I don't say he did that in every case, but it was equipped so he could do that." Vol. I, p. 627. Hastings stated positively this was not done, and that eggs of different ages were placed in the same compartment and allowed to stay there until the hatching occurred, only moving the eggs when ready to hatch to the bottom tray space just as Smith calls for in his patent.

The photographs taken by Hickox show eggs in process of incubation and some of them hatching, indicating that they were in all stages. The movement of the air in a continuous stream through the several stacks of

egg trays and thence back to the fan in a common stream where it mixes will bring about the heat transfer where the eggs in one stack are all of one age or of different ages. The object of uniform temperature is secured by blowing a common body of air over eggs of different ages, no matter what their arrangement as to age, whether in parallel or over one another. This is in harmony with the interpretation of this patent by this Court.

As a matter of law, even it were a fact that this prior use was financially or commercially unsuccessful it does not militate against it as a prior use, nor does the fact that the apparatus was crude and the electric fans not as perfect as they are today depreciate its value as a prior use.

As Mr. Chief Justice Taft, in *Corona v. Dovan,* 276 U. S. 358, 384 said:

> "It is a mistake to assume that reduction to use must necessarily be a commercial use" (p. 384.)[1]

As said in *Brush v. Condit,* 132 U. S. 39 (1889):

> "The case is that of the public, well known, practical use in ordinary work, with as much success as was reasonable to expect at that stage in the development of the mechanism belonging to electric arc lighting, of the exact invention which was subsequently made by the patentee; and, although only one clamp and one lamp were ever made, which were used together two and one-half months only, and the invention was then taken from the lamp and was not afterwards used with carbon pencils, it was an anticipation of the patented device, under the established rules upon the subject." (P. 48.)

Thus even if the petitioner is right that the Muskogee

---

[1] To the same effect are: Smith v. Sprague, 123 U. S. 249, 266; Telephone Cases, 126 U. S. 1, 536.

use was not successful as a financial venture, yet it is still a good prior use.

On the proposition that the testimony of Hastings and the corroborating witnesses contained mistakes and differences in non-essentials, we believe it is the experience of the courts and the bar that such a condition is a good reason for accepting the testimony of responsible witnesses because it shows their truthfulness. It is only the untruthful who are meticulously accurate in immaterial details as found in *Corrington v. Westinghouse,* 178 F. 711 (2 C. C. A.):

> "It is true that prior use must be established beyond a reasonable doubt, but testimony must be weighed in a patent cause as in other causes and the court *is not permitted to reject arbitrarily the testimony of respectable witnesses because of mistake and differences in non-essentials."* (P. 717.)

There has been no misrepresentation by Hastings and his witnesses. There has been no rebuttal; indeed, the petitioner's witnesses corroborated this prior use. This prior use is splendidly proved by impartial men of high standing, supported by contemporaneous public statements and published photographs.

Can it be true that Smith was not aware of these developments of Hastings—that were so widely advertised prior to his efforts in the field? Smith was not called to rebut this presumption.

Taggart testified that Smith "knew in 1923 there had been an incubator started down there." (Vol. I: 664.)

Petitioner would now have this Court believe that the Sirocco blower was not used by Hastings at Muskogee, because his testimony did not give the exact dimensions of this blower within a few inches, after the lapse of 22 years. Hastings said the opening was eight inches,

and Taggart testified it was eleven-and-one-half inches. Smith's action in sending Taggart in 1926 to buy this junk blower for $50.00—many times its value—is the best evidence that it was used by Hastings and that its existence was embarrassing. The reasons advanced why Taggart would not meet Lieber's terms so as to purchase this blower were given by Taggart that he wanted $5,000 for it and also wanted as a stipulation to the purchase an agreement that it should not be destroyed. (Vol. I, pp. 663-4.) *Keystone Driller Co. v. General Excavator Co.*, 290 U. S. 240.

Additional Hastings Publications.

In addition to the description quoted above from "Electrical World," of July 6, 1912, descriptions and photographs appear in both the trade and general magazines of Hastings' novel development. In the poultry trade magazine, "Poultry Culture," of February, 1912, Ralph H. Searle, Associate Editor, said:

> "This enormous capacity is attained by *superimposing twenty incubating trays one above the other so that* 5,000 *eggs are in a single chamber which measures about* 2 *by* 4 *by* 4 *feet.*
>
> "During hatching, trays with higher sides are placed on alternating tray slides, thus requiring two compartments for hatching the twenty trays incubated in one. With a total of seven compartments the hatchery has a working capacity of ten thousand eggs per week—on a floor space the size of a small bedroom.* * *
>
> "But why has not so simple an idea as the placing of *trays of eggs one above the other* not been tried before? The answer is, that it has been tried, but failed to work for the three following reasons:
>
> "First, the heated air rose, causing a stratification or vertical difference in temperature of about two degrees per foot.

"Second, such a mass of eggs is very slow in heating up.

"Third, most serious of all, once the animal heat develops, a large body of eggs could not be kept cool in the center and overheated just as would a pile of fermenting manure.

"These objections Mr. Hastings has overcome by enclosing an incubating chamber on four sides and driv[i]ng through it from top to bottom a blast of air delivered from a centrifugal fan. The rapidly moving air completely overcomes the temperature stratification of the air due to gravity and at the same time rapidly heats (or cools) the entire mass of eggs. As a result of this simple but effective application of a principle long known to other industries, but never before applied to incubation, the three difficulties above mentioned are overcome.

"The method of turning is that of rolling by hand when trays are reversed and shifted vertically. The inventor, who is a great questioner of all accepted things, was at one time skeptical of the necessity of turning, but experimentation in the Brooklyn plant established results that have elsewhere been found to the effect that turning, not less than three times a day will pay for itself in increased hatching.

* * *

"If 103 is correct for the top of the egg in the top-heat incubator, *the air in the forced draft machine must be carried at* 101 *degrees to secure similar results.* This temperature will be used in the Hastings Hatchery, until there is opportunity for fuller investigation.

"Although the difference is less marked than in the dead air machine it is to be expected that varying degrees of air temperature will be required in heating (or cooling) eggs in varying quantities and different stages of incubation. To accommodate this need, the inventor has ingeniously arranged that the air be divided, after it leaves the fan,

into two flumes. One of these passes the heater and the other does not. Into the ceiling of each compartment slide dampers open from either flume, so that by opening the two in proper relative proportions any temperature desired may be attained in any compartment.

"While this provision for varying the air temperature *at different* stages of incubation is requisite to careful work, it is not as necessary with the forced draft hatchery as with dead air incubators, *because the moving air adds to or removes heat from the eggs with great rapidity.* Because of this fact, *eggs at all stages can be placed in the same trays of the Hastings Hatchery with little or no injury. Mr. Hastings hatched several thousand eggs under such conditions in his Brooklyn plant last year.* This point, while upsetting a tradition, is of no practical significance because eggs of different ages should be kept apart as a matter of general convenience.* * * *

"* * * In daily practice the hatchery runs along quite automatically, continually adjusting itself to the changing demands upon its heating apparatus. Cold weather has no perceptable effect upon the temperature: *The first hatch was made during the recent blizzard.*

"Although temperature and humidity controls were convincing to the inventor, *the Muskogee public waited dubiously for Mr. Hastings' first hatch and it was not until* 164 *lively youngsters broke forth from* 192 *fertile eggs,* (250 *placed in machine*) *that local faith in the big incubator became general. Our last report finds* 158 *of these chicks a week old and without an ailing one in the flock, five weak or defective members having been killed during the first three days and one since drowned in a water pail.** * *

"The Hastings Hatchery offers the first real opportunity for full control of the various factors of incubation which make possible a complete study of the principles involved. Not the least of its practical advantages for experimental work is the fact that *the hatchery*

IN RESPONDENTS' EXHIBIT 26

is Mr. Hastings, who is testing the [illegible] for fertility.

The anteroom contains a com[illegible] ment, shown in Fig. 3, in which is p[illegible] the ventilating fan, the life of the [illegible] bator. Outside air can be admitted [illegible] this compartment whenever necess[illegible] This also shows the pan of water un[illegible] neath the fan, to keep the moisture [illegible] the air at the right amount. This fan [illegible] supplied by central station service of th[illegible] Muskogee Gas and Electric Compan[illegible] and the owner of the incubator keeps [illegible] duplicate on hand at all times to imm[illegible] diately put in place should a breakdow[illegible] occur. As a stoppage of ventilati[illegible] would make it necessary to throw aw[illegible] all the eggs in the incubator and [illegible] over again, it will be seen that the [illegible] pendability of the central station serv[illegible] is the biggest point of the whole proce[illegible]

From here we enter the main [illegible] bator, in which the temperature is [illegible] [illegible] at the right amount—[illegible] [illegible] The attendant will be seen [illegible] [illegible] out trays of eggs [illegible] [illegible] is done three times [illegible]

tographs of publication in the Hickox album: the photographs i
ication are the same as the photographs taken under Hickox directi

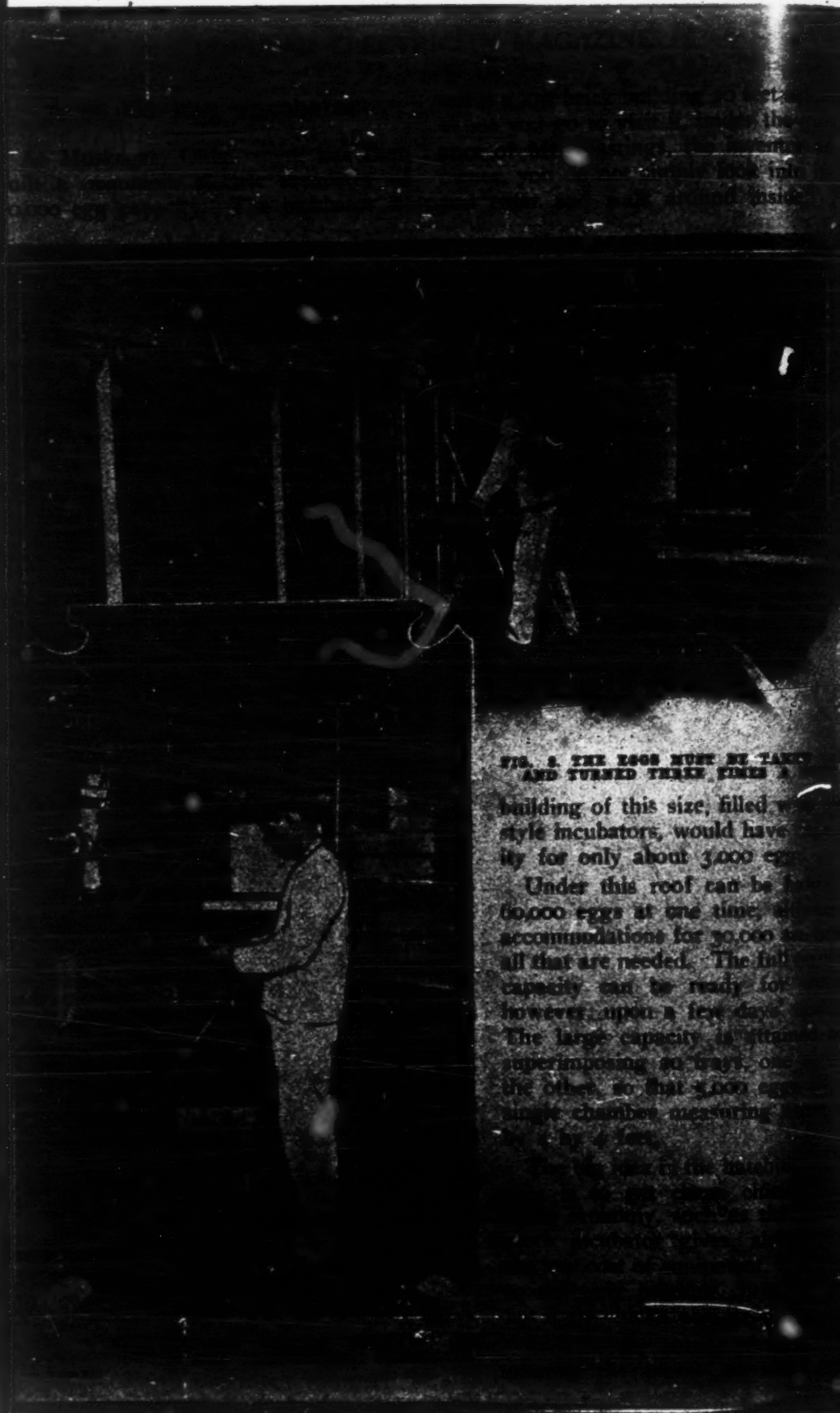


FIG. 2. THE EGGS MUST BE TAKE
AND TURNED THREE TIMES A

building of this size, filled w
style incubators, would have
ity for only about 3,000 eg

Under this roof can be
60,000 eggs at one time, a
accommodations for 30,000
all that are needed. The ful
capacity can be ready for
however, upon a few days'
The large capacity is attain
superimposing 20 trays, on
the other, so that 3,000 eg
single chamber measuring
by 4 feet.

is man-size and can be regulated for temperature and humidity so that the attendant works with the chick or egg without subjecting it to abnormal conditions. Certainly with such equipment, opportunity exists for some first class poultry research work." (Respondents' Exb. 23, Vol. II, p. 1115, etc.)

Later an article appeared in a national publication, "Popular Mechanics Magazine," November, 1912:

"The hatchery is a low brick building about 20 ft. square, and the *large capacity of the incubator is attained by placing 20 trays one above the other, so that 5,000 eggs fill a single chamber about 2 by 4 by 4 ft. in dimensions.* This arrangement of the trays is made possible by the use of an *electrical fan, which drives a blast of warm air through the mass of eggs from top to bottom,* and heats or cools the mass at the will of the operator. A duplicate fan is kept always at hand, for a sudden stop in the movement of warm air among the trays would result in all the eggs having to be thrown away. Reliability of current is, therefore, a big feature of the success." (Respondents' Exb. 24, Vol. II, p. 1117.)

Another national magazine, "Popular Electricity Magazine," published photographs in an article based upon Hickox publicity, which we insert here as photographed from the Hickox album. (Respondents' Exhibit No. 26.)

In April, 1913, George F. Paul wrote in the magazine, "Technical World," an artcle on "Hatching Chickens by Wholesale," which read in part as follows:

"This wonderful economy of space and cost is attained by placing the eggs in superimposed trays like the type cases in a printer's case rack, or the trays in a fruit dryer. This idea has been tried before but was not a success on account of the hot air rising. In the present instance, *this difficulty is overcome by forcing a continual current of air from a centrifugal fan*

through the hatching chamber, which serves to keep it at an even temperature throughout. While this is quite an item of expense and would not pay with a small machine, yet in a big plant it is paid for several times over by the saving of the duplication of the small machines, as well as by the economy of the fuel and labor.

"One of the unique improvements in the Texas plant is a turning system, by which compartments holding 10,000 eggs are swung on a pivot and the eggs turned by inverting the entire compartment. This enables one man to turn 100,000 eggs in less than two minutes. *These eggs are ventilated and maintained at an equal temperature by an eight hundred pound centrifugal fan,* requiring four horsepower to operate it, and *the temperature is regulated to a tenth of one degree, while water sprays regulate the moisture to a similar nicety.*" (Respondents' Exb. 12, Vol. II, p. 1095.)

The Court will observe the emphasis these publications place upon the combination of a forced draft in a continuous circuit for equalizing temperature of eggs in staged incubation of different ages giving off different amounts of heat, which was the basic idea of Smith, as this Court has already found. Without novelty in this idea or in this combination, Smith has nothing left.

(F) Petitioner's Witness Identifies the Muskogee Construction With the Drawing of the Hastings Application.

Petitioner offered in evidence the deposition of Lieber which he took in the Stone case. Lieber explained and identified the Muskogee construction and its operation by reference to Exhibit "A" which was a drawing identical with the drawing from the Hastings application. He supplemented this with Exhibit "B" (Vol. II, p. 793-4) which was an additional drawing prepared by the petitioner and identified by Lieber showing the Muskogee construction. These drawings are practically the same as those pro-

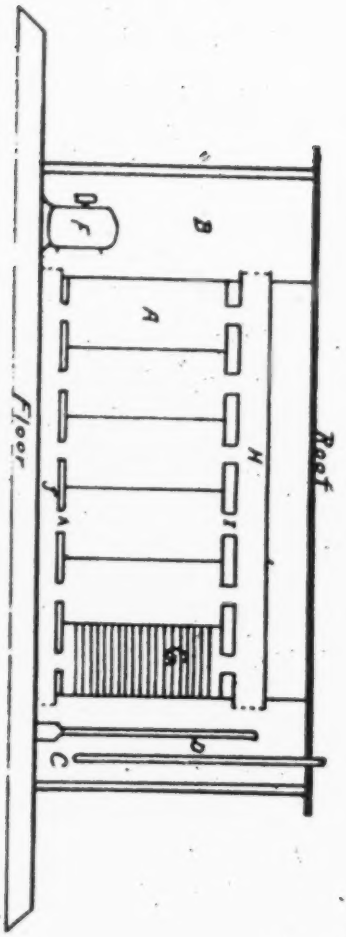
Exhibit "A" to
deposition of
John G. Leiber

A. Egg Chamber
B. Fan
C. Heating Pipe
D. Gas Burner
E. Perforated Partition or Fabric
Arrows indicate air movements

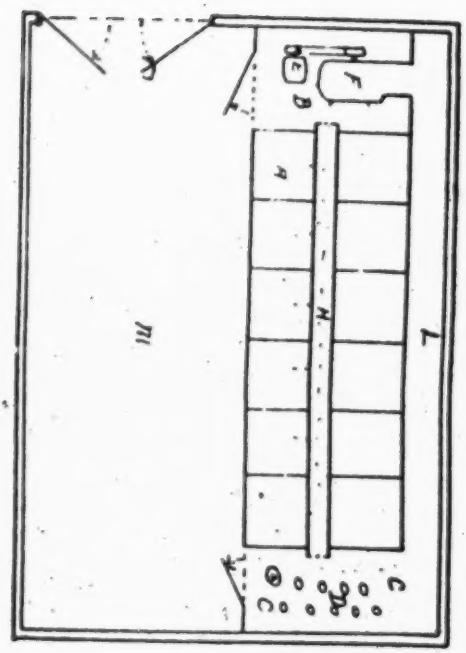
PETITIONER'S EXHIBIT

Exhibit "B" to deposition of John G. Leeber

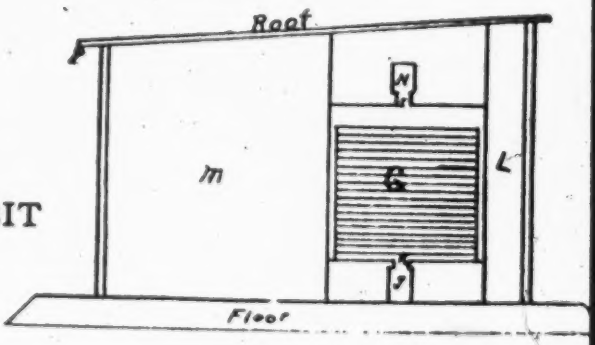
A. Egg chamber
B. Fan chamber
C. Heating chamber
D. Heating pipes or coils
E. Motor
F. Blower fan
G. Egg trays in position
H. Upper air conduit
I. Upper lateral conduit
J. Lower air conduit
K. Lower lateral conduit
L. Air passageway from B to C
M. Work space in front of incubator



Cross section, front view.



Floor Plan



Cross-Section, End View

PETITIONER'S EXHIBIT

duced by respondents here through Hastings and Lieber. (Defendants' Exhibits 22-A and 22-B.)

We reproduce these Exhibits A and B. Lieber's testimony explains the construction and operation fully in accord with respondents' witnesses. (Vol. II, Lieber pp. 778-81.) When this testimony is read, this Court will see why we say that petitioner is in no position to deny by this witness or any other that the construction and operation of the Muskogee incubator was as respondents claimed it to have been.

Point II

Infringement

The respondents' machine does not infringe for two reasons:

(a) Respondents' method is different: It does not "hatch," i. e., it does not have eggs in it from the eighteenth to the twenty-first day and, therefore, does not move air from the hottest eggs to the cooler eggs.

(b) Respondents' construction is different: It stirs its air with flat bladed stirrers at both the top and bottom of the egg cabinet, and does not drive air in a defined path as the air body is broken up by the stirrers.

Please compare this continuous circuit patent of the petitioner with air currents moving in well defined paths *over eggs of all ages in the same cabinet where they hatch,* with the illustration of the respondents' machine[1] having *eggs only from the first to the eighteenth day, with agitated air and no hatching.*

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[1] See illustration opposite p. 60 of this brief.

Respondents' machine was the independent development of the James Manufacturing Company, under the direction of A. B. Dann, a Professor of Poultry in Cornell University. It spent $35,000.00 in its development and has received its own patents on its method. (Markey Patent No. 1,939,908, Etc.; Vol. II, pp. 1146-1175.) Consequently, there is a strong presumption of non-infringement. *Corning v. Burden,* 15 How. 252; *Kokomo v. Kitselman,* 189 U. S. 8.

(A) Respondents' Separate Hatching Method Does Not Infringe.

Respondents' incubator has air stirrers to agitate the air. The eggs do not hatch in it as they are removed on the seventeenth or eighteenth day. This removal eliminates 180 per cent of the heat given off by the eggs in the first seventeen or eighteen days.[1]

The accompanying diagrammatic drawing shows the respondents' incubator and the sectional machine which is used as the hatcher. The hatcher is not claimed to be an infringement, singly or in combination with the incubator.

This separate hatcher has no mechanical means for stirring the air. The eggs are ventilated, moisture is supplied, heat is controlled, and nature is left to take its course in the hatching of the eggs.

No hatching of eggs takes place in the incubator where the eggs only remain for the first eighteen days. In the Smith patent the eggs are never removed from the first to the twenty-first day from the cabinet where they hatch. They are subjected to the same temperature and moisture conditions in the Smith machine, whether the eggs are hatching or incubating. They are subjected to the same disease conditions. All of the egg heat of the last three days must be accomodated.

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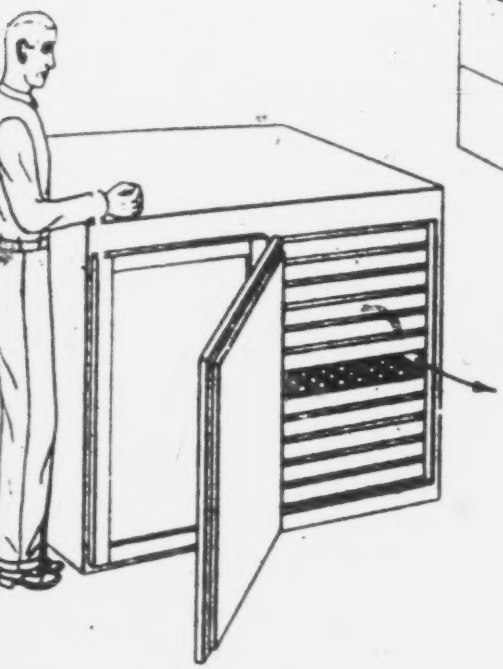
1 Petitioner's Exhibit 3, Vol. I, p. 676.

JAMES METHOD & OPERATION

SEPARATE INCUBATION
AIR STIRRING
EGGS 1ST - 17TH-18TH DAYS

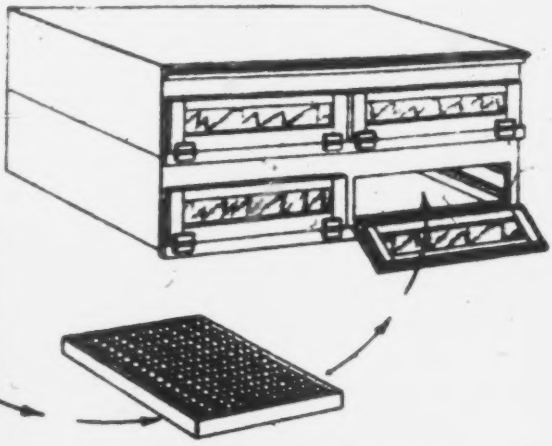
STEP I



INCUBATOR

SEPARATE HATCHING: MORE ADVANCED
17TH-18TH - 21ST DAYS
NO AIR STIRRING

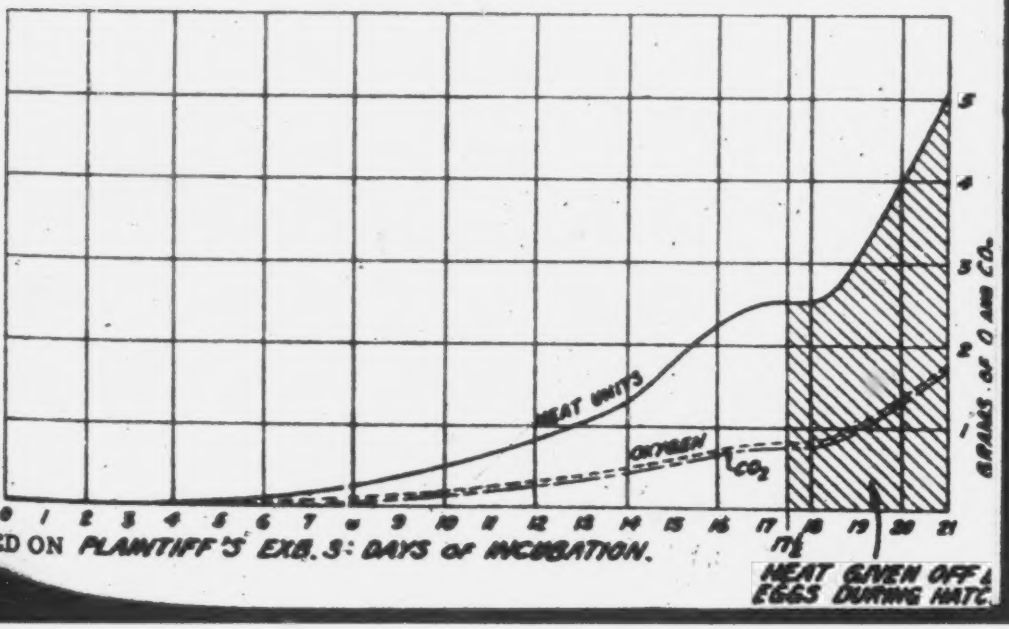
STEP III



TRAY TRANSFER IN OPEN AIR OF EGGS ON 17TH-18TH DAY

STEP II

HATCHER



In the James method, during the first eighteen days, the heat is maintained at 100½ degrees with humidity from 82 to 85 degrees During hatching, the temperature in the separate hatcher is raised to 103 degrees with an unlimited amount of moisture and no air movement of any sort. Smith, to the contrary, when hatching is going on, must keep his temperature down to 99 degrees because of the incubating eggs, even though the hatching eggs need more heat, and he must raise his moisure from 85 to 90 degrees, which is not suitable to the rest of the eggs which are not hatching. There are two schools of thought as to the best method of incubation and hatching according to the physiological conditions demanding different temperatures and moistures. The James Company follows one school under its Markey patent:[1] Smith follows the other school under his patent.

The physiological difference arises from the fact, as shown by Petitioner's Exhibit No. 3, that the heat given off by the eggs during the last three days while they are hatching is 180 per cent of the heat given off during the first seventeen or eighteen days. Physiologically by the seventeenth or eighteenth day the embryonic chick has developed from the germ to the completed animal, so that after the eighteenth day, a period of high mortality, the egg must be subjected to high moisture and a high temperature and should not be subjected to air movements to dry out the egg and the chick that is geting ready to pip. (Vol. I: 212-3, 233-4, 255-6, 308.)

In the James method the eggs giving off the greatest heat (from the eighteenth to the twenty-first day) are not in the incubator. There is no necessity for moving the air in well defined currents to remove the heat from

[1] Markey Patent No. 1,939,208. (Vol. II, p. 1166.)

the hotter eggs to the cooler eggs. A gentle agitation or stirring of the air is sufficient. There is no need to conserve moisture in the James incubator because the hotter eggs, during the last three days, are not present, which make the greater demand for moisture. This is shown by the fact that Smith has to raise his moisture content in the incubator to from 85 to 90 degrees when his eggs begin to hatch. (Vol. I, 148-9, 332-3.)

The second advantage of separate hatching is the reduction of disease. Bacillary white diarrhea is spread by the chicks taking in the bacteria through the pulmonary tract. The disease is spread, according to the Government bulletins, in proportion to the air movements.[1] Hence, machines like Smith must resort to extensive fumigation because the hatching takes place in a cabinet where the air is being driven in defined currents at high velocity.[2] In the James separate hatcher there is nothing to agitate the air and spread the infected down. **James, therefore, has produced a new method having a different sequence of steps.** James' effort has been not a quantity production in mammoth machines, such as Smith, but a limited production in individual units where not more than 5,000 eggs at a time are being incubated and where only a fraction of that amount is being hatched at any one time in the separate hatcher. (Vol. I, 301.)

However, Smith claims that, despite the fact his patent is limited to a method of hatching, James uses his invention for a part of the time, and, while James does not have eggs in the hottest or last stages of incubation in his incubator, yet he is an infringer, because some of the eggs in James are hotter than others. The

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[1] Vol. II. Exbs. 66 and 67, pp. 1225-1229.
[2] Vol. II, pp. 1225-29, and Vol. I, pp. 298-9; Respondents' Exhibits Nos. 66 and 67.

S. B. SMITH

INCUBATOR

Application Filed October 26, 1916

1,262,860 Patented April 16, 1918

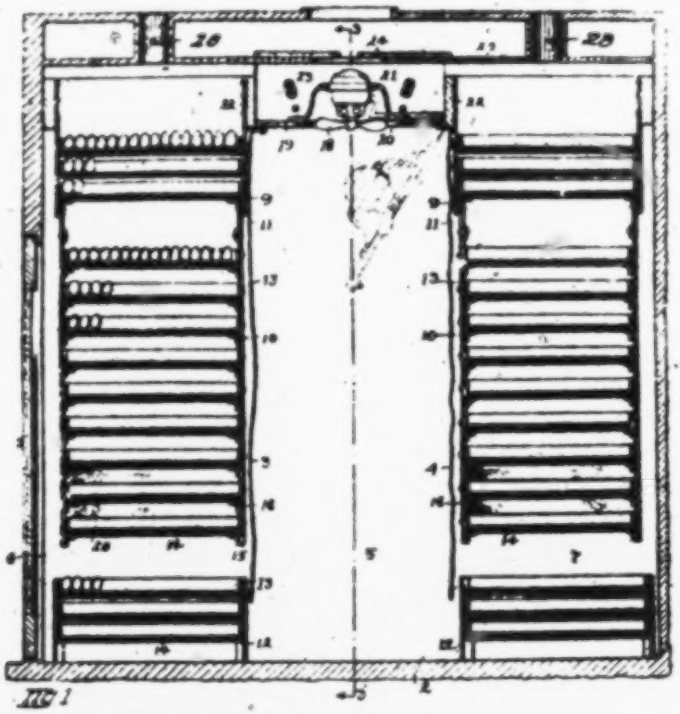
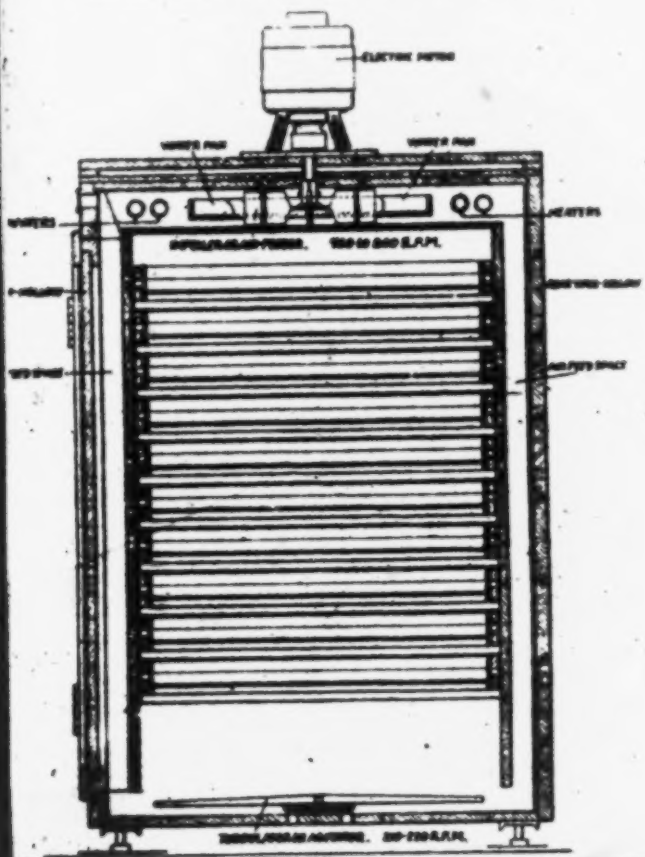
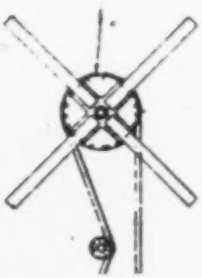


FIG 1

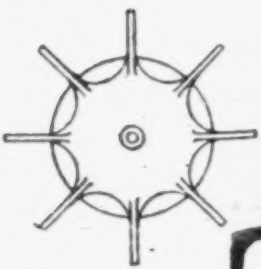
VERTICAL CROSS-SECTION OF DEFENBAUGH'S INCUBATOR.



Air Mixer
or
Agitator
210-220 R. P. M.



Impeller
or
Air Feeder
550 to 860 R. P. M.



fallacy of this position is shown by the authorities submitted with our analysis of the claims to the effect that to constitute infringement all of the different steps of a process must be followed in producing the same result. The record shows that different steps and a different apparatus using another method producing another result are employed by respondents.

(B) Respondents' Construction Does Not Infringe.

The present respondents have a machine in which the air is agitated. This stirring or agitation of the air is effected at the top and bottom of the machine by flat-bladed stirrers or air mixers.[1]

The incubator of the respondents consists of a small square box without any corridors. A man cannot go inside the machine because there is no corridor for him to stand in, and the machine is not big enough for a man to get into. It is not a mammoth incubator. It only holds 5,000 eggs. This small box contains a number of trays in two stacks closely adjacent to one another. The rear of the stack is spaced from the rear wall of the cabinet a couple of inches. The front of the stack is spaced from the front door several inches. At the top of the cabinet is an aluminum flat-bladed stirrer, longitudinally disposed, that churns the air and throws it out peripherally in *all directions*, churned and rotated in a whirling body, over the heating pipes and the water pan. As this churned air is displaced outwardly by the pressure of the flat blades it travels down the front and back of the egg trays where it is engaged at the bottom by another flat-bladed turbulator or agitator traveling at from 210 to 220 r.p.m. (the speed of the Petersime and Blum flat stirrers)[2]

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[1] Vol. I, pp. 204-7.

[2] Buckeye v. Petersime, 19 F. (2) 721-2 (Sixth C. C. A.)
Buckeye v. Blum, 17 F. (2) 459 (Sixth C. C. A.)

where any surrents of air are broken up and agitated so that there can be no defined air currents in this machine. This is necessary because the cold fresh air is taken in through the openings in the bottom of the cabinet and mixed with the warm air by this agitator at this point.

There is nothing above this agitator to cause the air to return to defined currents. The air passes in this turbulent agitated state without defined currents as it moves upwardly through the eggs in the trays due to the light suction of the upper stirrer displacing its air horizontally. This air speed is irregular and the air is agitated and turbulent in the eggs, as shown by the petitioner's own tests of respondents' incubator (Ex. 24). **Having broken up any air currents by the agitator, the air is in a state of general commotion and turbulence without defined paths as it is stirred amongst the eggs in the trays.** The air goes up at one speed in one place and down in another place at another speed. There is no "movement of the air in current form following substantially defined paths." James had no need to do this as it is not confronted with the problem of handling the high heat of the last three days of the eggs, i. e., the hatching eggs.

Petitioner proved by its Exhibit No. 24 (Vol. I, p. 686) that respondents' air is turbulent It showed the direction of the air, both up or down, and the speed of the air, both up or down, in each tray of the defendants' incubator. Their test showed this:

> Bottom Tray 1: Air speeds measured in vertical direction only vary from 205 feet a minute going down to 420 feet going up within a few inches of each other. All air speeds irregular.
>
> Tray 2: Air speed varies from 20 feet per min-

ute down to 380 feet a minute up; all air speeds in different places irregular and different.

Tray 3: Air speeds vary throughout the entire tray from 15 feet to 330 feet a few inches apart.

Tray 4: Air speeds vary completely throughout the tray ranging from 60 to 260 feet per minute a few inches apart.

Tray 5: All air speeds different throughout the tray ranging from 70 to 190 feet per minute a few inches apart.

Tray 6: All air speeds vary from 70 to 170 feet per minute a few inches apart.

Tray 7: All air speeds vary from 80 to 170 feet per minute a few inches apart.

Tray 8: All air speeds vary from 80 to 190 feet per minute a few inches apart.

Tray 9: All air speeds vary from 85 to 240 feet per minute a few inches apart.

Tray 10: Air speeds vary from 30 to 505 feet per minute a few inches apart.

Certainly, air cannot be traveling generally in one direction in a continuous, defined current where there is such tremendous variation in speeds and direction.

This air movement was found in respondents' machine by the Patent Office when it issued respondents' own patent to Markey, No. 1,939,908, which describes this operation thus:

Object to Churn Air.

"It is my object to provide means for churning the air and, at the same time, causing a vacuum in the top of a stack of egg trays, delivering the churned air over humidifying means for controlling its humidity and reducing its temperature, re-

storing its temperature, introducing fresh air into the churned air, evacuating a portion of the air that has once passed over the eggs, and returning the remainder of the air thus humidified, heated and churned to where it can be again churned, mixed and diffused, preferably in combination with incoming air, and then allowed to rise gently between diffusing supports of numerous eggs by convection and also due to the creating of a vacuum at the top of the eggs due to the churning of the air in a separated space above the eggs, thereby avoiding drafts, hot and cold spots and forced circulation of air which would move the air so rapidly that it would be unable to suitably treat the eggs."

This Markey patent was allowed over the Smith patent and in the light of it, and because it was distinguished from it, for these reasons. There is thus a strong legal presumption of non-infringement.[1]

The best test on non-infringement hinges on the question of whether or not as a matter of fact the stirrers at the top and bottom do churn the air and agitate it and do not drive it in a continuous defined path. In the first place, flat-bladed stirrers churn air: to drive air in a defined path away from the stirrers axially requires the tilting of the blades, as in the case of a household fan, such as Smith uses.

The respondents have proved by the overwhelming weight of the evidence that the respondents' air is stirred and churned in the incubation chamber and is given a bodily movement in a state of gentle commotion and utter irregularity.[2] Dr. Greene, Dean of Engi-

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[1] New Jersey v. Buffalo, 131 F. 265, affirmed 135 F. 1021 (2nd C. C. A.); Abbott v. Standard, 290 F. 418, affirmed 296 F. 126 (2nd C. C A.); Auto v. Amphion, 186 F. 159 (2nd C. C. A.); Simplex v. Leonard, 180 F. 763, affirmed 200 F. 581 (2nd C. C. A.); Knowles v. West, 43 F. (2d) 929 (2nd C. C. A.); Boyd v. Janesville, 158 U. S. 260; Corning v. Burden, 15 How. 252; Kokomo v. Kitselman, 189 U. S. 8.

[2] Vol. I: Greene, 203-8; 214-218; 264; 268-70; 401-4; Shodron, 346-8; Richards, 332-4; Zaffke, 344-5; Exhibit 73.

neering, at Princeton University, who tested this machine exhaustively, so testified. (Vol. I, pp. 252-3.)

Practical experience in the field with the James machine shows the difference in result when the bottom stirrer is used and when it is not. This demonstrated the necessity of churning the air with the bottom stirrer. Richards, who had charge of the Poultry Division of the northwest branch of the James Company at Minneapolis, testified that when the driving mechanism of the lower stirrer broke, the hatch was reduced from 5 to 10 per cent. The difference of 5 per cent would mean the difference between financial success and failure for the hatchery under present conditions. (Vol. I, p. 334.) Zaffke, in charge of the Poultry Division of the Fort Atkinson branch of the James Company, testified that when the lower turbulator or stirrer became inoperative, due to a broken belt, even for a few days, the resulting hatch, in actual cases, ran from 5 to 7 per cent lower, which would represent the difference between profit and loss in a hatching season. Naturally, the greater effect was in the bottom trays adjacent the lower turbulator, and the effect was not so great in the upper trays adjacent the upper turbulator, that did not stop. (Vol. I, p. 345.) Shodron, consulting engineer for the James Company, testified that "the turbulator or air mixer takes the downcoming air and the cold intake air, and thoroughly mixes them and breaks it up into a homogeneous mass." (Vol. I, p. 346.) He testified this was shown by the smoke tests, which showed that when the smoke was introduced into the chamber and "the air mixer motor was then started and immediately upon the action of the air mixer the entire mass of the smoke was thoroughly mixed so that it was a blended mixture entering the lower section of the chamber," which showed the turbulent nature of the air and the breaking up of any air currents when

the air passed up through the eggs. He ran tests when the incubator did not have the lower turbulator operating. He produced his test data and photographs of the apparatus being tested, saying "this series of tests shows that the efficiency is increased in incubation and that the increase of this efficiency is sufficient to make either failure or success of the machine." (Vol. I, p. 348, and Exhibit No. 73, Vol. II, p. 1231.)

The respondents do not conserve moisture: the petitioner must conserve moisture in his machine. In the petitioner's patented machine, due to the excessive heat set up by the eggs in the last three days, which tends to dry out all of the eggs, it is necessary, with a continuously circulating draft of air passing in defined channels, to conserve the moisture. The James machine has open water pans. Water is cheap and it need not be conserved, because the stirring of the air does not drive the moisture out of the machine. James does not have the heat of the hottest eggs for the last three days, which amounts to about 180 per cent of the total heat given off by the eggs during the first eighteen days.[1]

Even the petitioner admits that the bottom stirrer puts the air into commotion without any currents in a defined direction. Obviously, if the air at the bottom of the machine is in a state of general commotion and agitation and is slowly drifting upwardly, it must remain in such a condition as it moves up through the eggs as there is no additional fan to restore it to a defined current. This was proven by the smoke tests in respondents' machine. (Ex. 73; Dr. Greene, Vol. I, pp. 203-8, 214-8, 264, 268-79, 401-4; Shodron, Vol. I, pp. 346-8; Richard, Vol. I, pp. 334; Zaffke, Vol. I, pp. 344-5.)

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[1] See Petitioner's Exhibit 3, Egg Heat Chart, Vol. I, p. 676.

This Court's Definition of the Smith Patent.

This Court said in *Waxham v. Smith, et al.*, 294 U. S. 20:

> "But the function which a machine performs, here, the *hatching* of eggs, is to be distinguished from the means by which that performance is secured." (P. 21.)

And, in *Smith v. Snow, et al.*, supra, it said:

> "It was possible to carry on the process of incubation continuously by placing fresh eggs in the incubator at intervals, *as those of the most advanced stage hatched* and the new-born chicks were removed." (P. 6.)

The essence of the Smith invention lies in the retention of the eggs of the last three days in his cabinet so that the heat of these hottest eggs can be used to heat the cooler eggs from the first to the eighteenth days by the continuous current of air in a defined path forced over the eggs from group to group. This Court mentioned this, in the *Smith v. Snow* case, saying:

> "* * * The specifications and claim both contemplate a continuous circulation of the current of heated air through the chamber, which, regardless of its direction, would continuously operate, *by repeated contacts with the eggs in all stages*, to equalize the temperature throughout the chamber by carrying heat units from the warmer to the cooler eggs." (P. 12.)

Much has been said by petitioner as to the use of the comparative "warmer" to "cooler" eggs in the claims meaning that the claims apply to a machine which does not have eggs in the last three days. But on page 15 of his brief petitioner now confines his patent to one applying to eggs of all stages in a single room. This Court

said that Smith's "current of heated air * * * would continuously operate, by repeated contacts with the eggs *in all stages*, to equalize the temperature throughout the chamber by carrying heat units from the warmer to the cooler eggs."

In the incubator of the respondents it cannot be contended that the current of heated air contacts with eggs "in all stages." Respondents' eggs in the last stage of three days are in a separate hatcher totally without contact with the eggs in the incubator.

The second boundary of the Smith patent is that dealing with the air movements and was announced in disposing of the defense of Snow and Waxham that defendants in those cases had air agitation of Petersime and Blum type and not air currents in defined paths:

> "Assuming without deciding, that it calls for a current of air so constant in its movement and direction as not to depart substantially from a well defined path, one would expect that a fan operating, as in respondents' machine, within a closed chamber under substantially constant conditions, *would produce currents of air without substantial variations of path.*" (P. 19.)

This Court said that the patent covered the Waxham machine, because, "The evidence supports the finding of the Special Master and of the two Courts below that the currents of air set in motion by the fans *flow continuously along defined paths.*"

And, likewise, the Court said:

> "It is enough that there is a movement of *air in current form following substantially defined paths through the tiers of egg trays,* sufficient to effect the desired transfer of heat units." (P. 20.)

When the defendants in the *Snow* and *Waxham* cases attempted to prove that their machines had agitation of air, that is, air moving not in defined paths, *this Court found that those machines did not have agitation,* but did have air flow in currents along defined paths and, therefore, were infringing machines. In this manner, the Court affirmed the Ninth Circuit which distinguished its decision on the Waxham machine from the air agitation or stirrer machines of Petersime and Blum in the Sixth Circuit,[1] by holding that Waxham and Snow had air currents in defined paths and did not have agitation as in the Petersime and Blum machines.

The Claims Are Not Infringed.

Taking Claim 1 as the typical method claim, the respondents do not infringe because:

First, they do not have a method of "hatching."

Second, they do not utilize the heat of the hottest eggs during the last three days which give off 180 per cent of the heat given off by the eggs in the first eighteen days, in the practice of the method.

Third, they do not conserve moisture and do not need to conserve moisture in the sense used in this patent.

Fourth, they do not move the air in a defined current from one place to another as defined by the Supreme Court in connection with Claim 1, but agitate

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[1] We quote the Court's description of the Petersime and Blum machines in the Sixth Circuit: "Defendants' device was operated under my observation at this hearing. Undoubtedly the air within the incubator chamber is in commotion. It is not at rest in any part of the chamber. • • • **It may be accurately described as a stirring and churning operation. It agitates the air, but does not drive or force it in any uniform or ascertainable direction."** Judge Westenhaver in Buckeye v. Blum, 17 F. (2) 459. "The Petersime device is an open box without partitions, in which there are egg trays of different sizes arranged in a drum. • • • There are inlets for air at the bottom and outlets at the top. The air in the drum is agitated by a slow moving stirrer, but there is no defined current created by the agitation. • • •" Buckeye v. Petersime, 19 F. (2) 721, 722 (C. C. A. 6).

it and churn it, as in the Petersime and Blum machines. The same things are true of method Claims 2 and 3.

As to the mechanical Claim 5, it specifies a corridor which defendants do not have. It specifies a power-driven fan, *meaning an instrumentality that moves the air in a defined circuit,* while the defendants use agitators or stirrers for putting the air in general commotion without a defined current.

Therefore, respondents both lack the steps of the method of the petitioner, and also the mechanism for practicing those steps. We found our case squarely upon the doctrine of *Royer v. Coupe,* 146 U. S. 524, 531, in which Mr. Justice Blatchford said:

> "* * * it must be shown that the defendants used all the different steps of that process, or there could be no infringement; that the defendants did not use the sweating process, which was the first step in the plaintiff's treatment, and therefore did not infringe." (P. 530.)

As this Court said in *Westinghouse v. Boyden,* 170 U. S. 537, 569:

> "But, after all, even if the patent for a machine be a pioneer, the alleged infringer must have done something more than reach the same result. * * * As was said in *Burr v. Duryee,* 1 Wall. 531, 573 * * * 'That two machines produce the same effect will not justify the assertion that they are substantially the same, or that the devices used are, therefore, mere equivalents for those of the other.' Not only is this sound as a general principle of law, but it is peculiarly appropriate to this case." (P. 569.)

Even if we grant to Smith the most generous latitude to his claims, still there is no infringement by these respondents.

Point III

Answers to Petitioner's Objections to the Hastings Defenses and Petitioner's Claims of Infringement

(A) Objections Answered as to "The Dollar Hen."

Petitioner objects to "The Dollar Hen" because Hastings' ideas were inspired by the practices in cold storage rooms, but this Court has already held that it was invention by Smith to apply to incubation the teachings and principles of other arts, such as those of heating and ventilation, of which refrigeration is a part.[1] Besides, the origin of the statements in an anticipating publication can scarcely be of importance because the important issue is the nature of the disclosure itself, irrespective of its origin.

The principal objection now made to "The Dollar Hen" in petitioner's brief (page 20) is that it lacks "The ordered and intelligent utilization of the endothermic and exothermic properties of a large mass of eggs, *set with some regard for their progression in incubation,* was wholly a closed book to Hastings." But here again we observe that this patent has already been interpreted by this Court as not limited to the specific position or "progression" of the eggs of different ages nor the movement of them, as taught in the Smith patent, from one place to another and therefore the Smith patent is not limited to the arrangement of eggs "set with some regard for their progression in incubation."

Petitioner heretofore in the *Snow* and *Waxham* cases vigorously proclaimed that his patent was not to be so limited despite the teaching of egg movement in his patent; and now he complains that "The Dollar Hen" is

[1] Smith has to resort to refrigeration principles by using cold water in his heating pipes to control the excess heat at hatching time. (Vol. I, pp. 156-7.)

not anticipatory because it does not recite in detail this factor of eggs being set "with some regard for their progression in incubation" which he formerly said was not important.

Furthermore, "The Dollar Hen" does make even this specific disclosure, teaching the movement of the eggs into another position in the single room at hatching time when Hastings said:

> "At hatching time the eggs are spread out in trays in a special hatching room, which is only large enough to accommodate chicks to the amount of one-sixth of the incubator capacity, for twice a week deliverings, or one-third if weekly deliverings are desired."

Can petitioner then truly say that Hastings did not teach in "The Dollar Hen" evenness of temperature in a room occupied by eggs of different ages, secured by a steady current of air maintained, as he said, "sufficiently brisk, however, to prevent an unevenness of temperature in different parts of the room"? Even petitioner's further limitation of his patent to setting with some regard for progression in incubation is disclosed by "The Dollar Hen."

(B) Objections Answered as to the Davis-Brooklyn Incubator.

Let us test the assertion that the principles of the Smith invention were not embodied in the Brooklyn incubator. The basis for petitioner's assertion is that in the Davis incubator there were fabric panels at the top and botom of the stacks of egg trays through which the air had to be driven by the fan from top to bottom in a continuous circuit over and over again, that these fabric sheets so reduced the air flow that there was not sufficient air circulation, and that the incubator was in effect a still air machine, quoting incomplete, fragmen-

tary portions of the record to support his theory. Such is not the fact and the record so shows, but petitioner failed to quote that part of the record. (See the complete testimony on this subject, Vol. I, pp. 550-553.)

The quotation in petitioner's brief (page 25) left out the preceding sentence, which said: "I did that early in the season; at the beginning of the operations." (Vol. I, pp. 550-551.)

Hastings then explained that the fabric panels did not affect the hatching, but he early found them unnecessary as checking the air flow and serving no useful purpose, so he removed them. He said, referring to Exhibit 21: "The drawing does not show the fabric panels which I used at the Davis hatchery because that was a trial effort or idea in the first construction of the machine and was dropped from the usage, and the drawings show the machine as used after it had been tried out and found that the fabric panels were not necessary." (Vol. I, page 552.)

The fact that he used the fabric to distrbiute air equally in the egg chamber indicates that he understood the necessity for equal distribution of air by the fan, and the fact that he removed it shows he understood the principle so well that when he found he could reduce the resistance to air flow and improve his principle of air velocity and at the same time have equal distribution of air, he removed the fabric diffusers. This seems to us to be the logical and sensible course of a man who understood the principles of the forced circulation of air by a fan in a continuous circuit over the eggs of different ages.

In his Muskogee prior use he used large openings in top of his tray stacks (see Photo, Exhibit 26-F) and controlled the balancing of air for each tray stack by slides. His fan was at one end of the hatchery and neces-

sarily the opening in the stack tops meant the fans would get more air than those further away unless he used the slides to cause a balance of air distribution—again proving his understanding of *the principle* of equal distribution of air draft in a circuit over eggs of different ages.

Petitioner criticizes the disclosure in the Hastings patent application which shows in the dotted lines perforated panels or fabric sheets for diffusing the air on the ground that this would so impede the flow of air from the fan that the chamber A would be practically a still air chamber.

The fallacy of this argument is that the arrows in the drawings of the Hastings application show the air actually passing through the chamber A as the air is driven by the fan through the perforated members E to evenly distribute the air, and what is more important in this drawing, *the air can never get back into the eye of the fan and be recirculated unless it passes through the chamber at fan velocity.* There would be no other purpose for the fan. Fan B would have to build up sufficient pressure with corresponding velocity for this purpose if it were to have a continuous circuit of air as described by Hastings in his application. Any mechanic could select a fan strong enough to follow this disclosure.

Petitioner now regrets the position he heretofore took in this Court that it made no difference under his patent where the eggs of different ages were placed in the air circuit and he is *now* trying to retract that position in order to avoid the Hastings-Davis prior use on the slim ground that the Davis eggs were of different ages in the *same tray* and that the Smith patent is limited to eggs of the same age in a single tray. We find no such statement in this patent. (Pp. 28, 29, petitioner's brief.)

Hastings knew that it made no difference whether you had eggs of different ages in each tray in the stack

or whether you kept the eggs of different ages apart in separate trays. That is only a matter of "general convenience" in keeping track of when the eggs are going to hatch. As Hastings said in his article of February, 1912, in "Poultry Culture":[1]

> "While this provision for varying the air temperature at different stages of incubation is requisite to careful work, it is not as necessary with the forced draft hatchery as with dead air incubators, because the moving air adds to or removes heat from the eggs with great rapidity. Because of this fact, eggs at all stages can be placed in the same trays of the Hastings Hatchery with little or no injury. Mr. Hastings hatched several thousand eggs under such conditions in his Brooklyn plant last year. This point, while upsetting a tradition, is of no practical significance because eggs of different ages should be kept apart as a matter of general convenience." (Page 14, "Poultry Culture" of February, 1912. Vol. II, p. 1116.)

Petitioner claims that even if Hastings did have stage incubation, he did not realize its benefits or advantages. That he did so is amply shown by the publications and patent application quoted in this brief, but even if he did not, it is not incumbent on an inventor to realize the advantages or reasons for what he does or even correctly state them. *Diamond v. Consolidated*, 220 U. S. 428, 436.

The answer to the charge that the Davis use was not a public one is this: friends of Davis and of Hastings were shown the incubator. (Vol. I, p. 534.) A disclosure to a single person is sufficient to make the idea public. It matters not whether they were personal friends

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[1] We direct the Court's attention to the fact that petitioner in his brief on page 29 only quoted one sentence from this paragraph, **while the complete paragraph** read with the sentence shows its real meaning and the fallacy of the attempted argument on this one, isolated sentence. Vol. II, p. 1116.

or impersonal visitors. *Corona v. Dovan*, 276 U. S. 358, 382.

Chicks were produced commercially from the Davis machine and turned over to Hastings' employer Davis for use on his poultry farm. It was operated for trade and profit. This makes a public use out of the commercial operations of the machine. Hastings said:

> "I operated it personally through the active season until Mr. Davis had as many chicks as he could handle."
>
> *Smith v. Sprague*, 123 U. S. 249, 256.
> *Root v. Third Ave.*, 146 U S. 210, 225-6.
> *International v. Gaylord*, 140 U. S. 55, 62-3.

The truth of the matter is that the Hastings-Davis prior use admittedly had a fan driving air in a circuit through a column of egg trays and in the trays were eggs of different ages, which were put there as they could be secured from those who had the eggs to sell—and two thousand eggs were so handled—an amount in one room beyond anything anyone had ever handled at one time in a single machine with a fan. (Vol. I, p. 547.)

Some claim is made (petitioner's brief, p. 33) that the Davis prior use handling a maximum of 2,000 eggs could not be an anticipation because it did not handle larger masses, such as 52,000 eggs, but we cannot take seriously such an assertion in view of the fact that everywhere through this brief of petitioner such heavy emphasis is put upon principles and that the Smith patent is not limited as to any number of eggs handled at one time so long as its principles are used. Indeed, the James incubator only handles 5,000 eggs at a time and petitioner says this is an infringing incubator.

Petitioner even goes further and says that it is an infringing incubator even though the eggs in respond-

ents' machine are not kept during the full period in the machine and therefore the eggs of respondents are not kept in "one room" which petitioner now says is essential to his patent's validity. **Throughout petitioner's brief it is obvious there are different limitations and interpretations of the Smith patent when it is to be compared with the prior uses and publications; and when it is to be treated on the infringement questions.**

(C) The Muskogee Incubator an Anticipation on the Basis Assumed as to Its Construction and Operation by Petitioner.

In considering the statements of petitioner as to Muskogee prior use, this Court will now see the reason petitioner has elected in this case to insert a new limitation in his patent that "the eggs in staged incubation must be set in one room," which was a limitation specifically disclaimed in the *Snow* and *Waxham* cases when the petitioner was asking this Court to disregard the fact that his patent showed its column of egg trays in two separate rooms, formed by the partitions 3 and 4, and to hold that these rooms formed by partitions were immaterial and that the open box in one room was an infringement of his patent. His position is now contrary to the drawings of the Smith patent. The Smith patent has a room divided by partitions in which the eggs are located and communication is had between the two compartments by a communicating air stream passing from top to bottom. This Court has held that it makes no difference how the eggs are arranged in those compartments, or the relative age of the eggs in one place as compared with another in the room or whether there is one room without partitions, as in the Snow and Waxham machines, or two compartments behind the partitions as in the Smith machine. So long as the principle of the defined circuit of air moves over the eggs of all ages in all the rooms and that body of air is mixed by

a fan and is common to all the eggs in all the rooms; that is Smith's claim.

Not to so hold, would be to exclude the machine shown and described in the Smith patent and that is what petitioner would have you now do in order to avoid the Muskogee prior use as limited by it. Our further answer is that even if Muskogee were so limited and assuming for argument that everything petitioner says is correct as to Muskogee operation, (which we do not admit), then the Muskogee prior use is precisely the same as the principles of construction shown in the drawings of the Smith patent, as interpreted and defined by this Court and has the same operation. Therefore, there is complete anticipation.

Now what is this interpretation of the Muskogee incubator that petitioner would have this Court adopt to avoid the Smith patent when limited to eggs in staged incubation set in one room? Petitioner says that the Muskogee prior use consisted of a series of adjacent chambers, seven in all, each intended to receive about 5,000 eggs. Each chamber was closed, he says, except for openings at the top and bottom, the top openings being controlled by a sliding damper. Air was supplied through a flue or passageway to these inlet openings and removed from these inlet openings by the suction of the same fan to which it was returned and used over and over. Petitioner says that eggs of the same age were in each compartment and the differences in ages were only in that the eggs in one compartment differed from another and adds that the eggs, as they increased in age, were moved progressively from one compartment to another. He says that the temperature adjacent the eggs in each compartment differed from that in the adjacent compartment, but has to admit that this temperature was controlled by being transmitted to the

air passing through each compartment which air, taking up that heat, entered the common air stream which was redistributed from the fan into the column of eggs of lesser heat in a continuous circuit.

Respondents claim that even if all this were true, which the witnesses denied as being the practice followed except experimentally, then there is still complete anticipation, giving to the Smith patent its interpretation accorded it by this Court upon which respondents rely. The Smith patent shows separate compartments in which there are stacks of eggs through which split air streams were circulated from a common fan, which air streams came back to the common fan for re-circulation, as in Hastings, and this air traveled through a central corridor or passageway and top flues. The physical and operation analogy is therefore identical between Smith and Hastings. Smith said his preferred form was to arrange the eggs in each column in groups according to age and heat. Petitioner claims that Hastings arranged his eggs in groups according to age, but like Smith being subjected to the tempering influence of a common air stream split into independent streams for each compartment before returning to the fan as a common stream. Smith taught the movement of his groups of eggs from place to place according to age. Petitioner claims Hastings moved his eggs in groups from place to place according to age.

The only distinction that is left is that Smith used varying egg ages in a single compartment and petitioner claims that Hastings used eggs of one age in a single compartment but the eggs of different ages allocated to different compartments. This is a difference in convenience because the principle of Hastings and Smith remain the same, namely, the air was moved in a single room from a common fan through a common inlet pass-

ageway or flue to the several compartments and removed by the same fan through passageways for redelivery so that the heat picked up by this common air stream from the hotter eggs and mixed with the air stream from the cooler eggs would be redistributed to the eggs of all ages for temperature control. In the *Smith* and *Waxham* cases, this Court said that Smith was not limited to the compartment idea or the arrangement of his eggs any place or in any order, but his invention covered the eggs located anywhere in any order of arrangement and any relationship so long as in the box there was air moving on the impulse of a fan in a defined body of air passing over eggs of all ages at all stages of incubation in such a manner that the heat of the later eggs would be picked up by the air and transmitted to the cooler eggs to control the temperature of all the eggs in the incubator.

We submit that the sum and substance of petitioner's argument against the Muskogee prior use, even assuming for argument that he is correct, on such assumption makes out a complete anticipation of the Smith patent.

The fact that Hastings did not succeed commercially or financially; the fact that after demonstrating that his invention would work at Muskogee, even though not financially successful, he was so confident of the practical success that he desired to start larger incubators elsewhere; or the fact of his subsequent employment and history are factors that have nothing to do with this prior use. It must stand, as it can do so, upon its own record.

We are persuaded that it did so successfully operate, that it was a threat to the Smith monopoly and that Smith was desirous of removing this threat because his own Taggart admitted that Smith both knew as early as 1923 of this prior use. As this litigation progressed in

the Courts he was driven to the dangerous expedient of having Taggart try to buy the blower of the Muskogee prior use, which was then in 1926 a useless piece of machinery, for the substantial sum of $50.00 in order to put it into a "museum." We hear nothing more of this alleged "museum" and there is no proof of any other early apparatus finding a final resting place in this "museum." Why was this blower of Muskogee *of this particular prior use* selected as the honor piece for inclusion in this mythical "museum?"

Petitioner in his brief says (p. 52):

> "At the time of taking Lieber's deposition, a blower fan illustrated in the photographs (Exs. 22 B-F; James R. p. 1113-14) was exhibited at Hastain's farm and was offered in evidence as the blower fan concerning which Lieber and Hastings testified. *This is not the fan.* It is a spurious substitute."

Can we accept the charge that this blower or fan is a "spurious substitute" when it was sufficiently genuine to justify the payment of $50.00 so it could occupy an honored place in Smith's "museum?" The two things do not match: Why should Smith send Taggart clear to Oklahoma to pay $50.00 for a rusting blower in an Oklahoma farm field for his "museum" if it was a spurious substitute?

Taggart testified:

> "* * * I did have some negotiations with Mr. Lieber on this matter, in the spring of—in April, 1926. It was after the Stone case and the Cooley case, and it was also after the Wolfe case. In all of these three cases which I have referred to, this alleged Hastings prior use had been thoroughly gone over by the defendants. I was not present at the Wolfe case, and I only know about that from the record.

"As to my purpose in entering into this negotiation with Mr. Lieber, and what I had in mind—at that time I had been requested to get together duplicates on reconstructions of early methods of incubation for the purpose of studying them, and with that idea in view I wrote to Lieber asking him if the equipment which he told me about he had, if he would sell it, and I offered him $50.00 if he would send me the blower and trays which he had told me were a part of the original Hastings incubator. He replied that the blower or trays had no intrinsic value, but that to him they were worth $5,000.

"I first saw this blower in August, 1926. It was after these negotiations I have been talking about.

* * * * * * * * * * *

"In my negotiations with Mr. Lieber in reference to this blower, in addition to his stating that it was worth $5,000 to me, I think Mr. Lieber made the stipulation that he did not want it destroyed. My negotiations came to nothing, I did not buy the blower. After I saw the attitude that he took in the matter, we did not pay any further attention to it. * * *

"It was April 14, 1926, that I opened these negotiations with Mr. Lieber for that blower. **My interest in buying it was based upon the assumption that it had been used in the Hastings' incubator in 1912 and 1913 at Muskogee.** I had been told by Mr. Lieber that he had this blower, but at that time I had not seen it.

"I first learned of the Hastings incubator being operated in Muskogee, I think in the spring of 1923. I learned of it in conversations with Dr. Smith. That would be my best recollection. I cannot say how I first learned of it; when I became associated with Dr. Smith in the spring of 1923 and we were in incubator work. Dr. Smith knew in 1923 there had been an incubator started down there.

"My reason for not carrying my negotiations any further with Mr. Lieber was not due to the fact that he had requested that the blower be not destroyed; that was not the reason I stopped my negotiations with Mr. Lieber. One thing that I had in mind at that time was that we would get up a museum of incubators, and that was part of our reasons for wanting it. In fact, it was one of the main reasons, but when he put a price on it, such as he did, why then, we immediately lost all interest in it." (Vol. I, pp. 663-665.)

Petitioner says that Hastings' Muskogee prior use could not be an anticipation because the air speed was only about 30 feet a minute, but in respondents' machine the air speed, as proven by the petitioner himself (Exhibit 24), is in many places less than 30 feet a minute. We can hardly see why a machine such as respondents' where at many places in the column of eggs the speed is less than 30 feet a minute, can be an infringement, while in another part of petitioner's brief the Hastings prior use that has 30 feet of air a minute is not an anticipation on the forced draft feature.

Vital Differences Between Smith Prior Use and Hastings Prior Use.

Petitioner says that the Muskogee prior use is no more than the Smith prior use heretofore before this Court. (P. 67.) His position is that in both the Smith prior use and the Hastings Muskogee prior use there were separate compartments with eggs only of a single age in both compartments.

The vital fallacy of this comparison is that **in the Smith prior use there was no communication between the compartments and in the Hastings prior use there was communication between the compartments** which had a common fan, a common air circuit, and the practice of the principle of a common air body moving in cir-

cuit over eggs of all ages transmitting heat one to the other. It is this vital distinction between the Smith prior use and the Hastings Muskogee use that makes out anticipation of Smith. The Muskogee prior use provided for *communication* between the compartments by having *a common air stream* repeatedly circulated by a common fan so there could be heat transfer between eggs of different ages through the medium of the common air stream.

This Court distinctly pointed out the difference between the Smith prior use and the Smith patent when it said:

"At the time indicated he used commercially an incubator arranged in three *completely separated* compartments *in each of which* there was circulation of the air by *a fan*. But there was no staged incubation in any single compartment." (*Smith v. Snow*, 294 U. S. 1, 16.)

In the Hastings prior use, the compartments are not "completely separated" and in the Hastings prior use there is not a fan in each compartment. To the contrary, in the Hastings prior use there is **one room** as in the Smith patent; the series of stacks of egg trays are separated by vertical partitions as in the Smith patent; there is a **common fan,** as in the Smith patent, blowing **a common body of air,** as in the Smith patent, which air is divided into independent streams passing through each stack of eggs and is then reconsolidated into the main stream and mixed by the common fan, as in the Smith patent. This makes Hastings an anticipation. These are vital differences from the Smith prior use.

(D) Petitioner's Inconsistency on the Infringement Issue and Prior Uses.

The logical basis of comparison on infringement is to start with petitioner's new and much more limited interpretation of its patent in this case (p. 15, brief) than in the *Snow* and *Waxham* cases.[1]

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[1] Pp. 3-4 of Smith's brief before this Court in the Snow case.

The respondents have one cabinet in which eggs remain for the first 17 or 18 days during incubation. They have another *entirely separate* cabinet that contains the eggs during the last three days. They are exothermic only and give off 180 per cent of the heat given off by the eggs during the first eighteen days. The two cabinets have no connection with one another. The physiological and pathological reasons for this separation on the 17th-18th day have been set forth above (p. 62). The progress of the art has taught the desirability of this new method.

Petitioner now says that its patent is not broad enough to cover "hit and miss setting of eggs of varying ages," but "the eggs must be set in staged incubation which is defined as the successive setting of eggs within the cabinet at brief intervals. In order to secure the benefits of the invention, intelligent use must be made of staged incubation so as to secure an approximate **balance** between the endothermic and exothermic eggs." (Petitioner's brief, p. 14.)

Now what is this "balance" as taught by the patent in suit which is the sole legitimate source of our information? It is the use of the eggs of *all* ages and the use of *all* the eggs so that **the "balance" of the first ten days of cold eggs is struck with the remainder of warm eggs from the 10th to the 21st day.** Nature has divided time of the cold and hot periods into approximately equal parts and it was the pitting of one part against the other that Smith so carefully described in his patent and that Smith and Hastings utilized. (Petitioner's Exb. 3, Vol. I, p. 676.)

James does not use this "balance" because it removes the latter half of the egg life when it takes away the eggs of the last three days, placing them in a separate compartment: the "balance" is gone. The heat during

these three days is 180 per cent of the heat given off during the first eighteen days.

Now where does Smith in this case say these eggs in staged incubation, that is, of all the different ages, must be placed in order for the heat interchange to function? He says (page 15) that "the eggs in staged incubation *must be set in one room..*" James does not set all the eggs in staged incubation in one room, but in two rooms; and thereby follows a different school of thought from that of the patent in suit. Can we imagine petitioner admitting, in view of his position on the Hastings prior uses, that this James separate incubator-hatcher would be an anticipation if it were a prior use? Why petitioner even says the Hastings Muskogee prior use which only puts, as he claims, eggs of the different ages in parallel communicating compartments, with a common air stream, is not an anticipation, yet he would have this Court find that the complete separation of the eggs in separate rooms is an infringement!

And the last proposition of petitioner (brief p. 15) is that "The air must be circulated about *all of the eggs* in this single room.* * *"

The James incubator does not have the air circulated about "all" of the eggs and "all" of the eggs are not in a single room. And petitioner again (page 16) reiterates that the air current must move over "all of the eggs" and it must be the "same body of air" passing over "all of the eggs" which subjects them "to the same temperature," while in the James machine there is a different air and a different temperature, the incubator being held at 100½ degrees and the hatcher at 103 degrees.

It will now be apparent why the Smith method claims and the Smith patent so carefully refer to the "hatching" process because Smith was endeavoring to "balance" the first ten days of cold eggs against the last ten days of warm eggs to get the result on the 21st day of hatching

"so as to secure an approximate balance between the endothermic and exothermic eggs," as claimed by petitioner in *now* defining his patent.

The mode of operation controls the question of infringement in law. *Burr v. Duryee,* 1 Wall. 531, 573. *Cimiotti Unhairing Co. v. American Fur Ref. Co.,* 198 U. S. 399, 414.

Conclusion

The Hastings publications both show lack of inventorship by Smith and anticipate the Smith patent. The Hastings' prior uses corroborated by the Hastings application show an earlier reduction to practice and anticipation of the Smith patent. The new and very much more limited scope sought by petitioner for the Smith patent to avoid the Hastings anticipation is fruitless because even the Hastings publications by themselves or the Hastings prior uses, particularly the Muskogee use, as interpreted and admitted by petitioner to have been operated, anticipate the Smith patent.

We submit that this Court can safely adopt the findings of the Circuit Court of Appeals of the Second Circuit because they are not clearly and manifestly wrong, but to the contrary, they are founded upon widely published documents, contemporary dated records, and the credible testimony of reputable witnesses. These findings are supported by competent evidence. Petitioner's only complaint is that the findings are contrary to the weight of the evidence. This is not sufficient. *Lawson v. United States,* 207 U. S. 1, 12; *United States v. United Shoe,* 247 U. S. 32, 41; *Butte v. Clark,* 249 U. S. 12, 30.

As to infringement, petitioner's new position as to the scope of its patent being limited to a single room with all of the eggs of all stages in that room, *balancing* the heat

one against the other, emphasizes the non-infringement by respondents with their dual cabinets and separated eggs.

Respectfully submitted,

H. A. Toulmin,

H. A. Toulmin, Jr.,

Counsel for Respondents.

udgment Suggest cubator and the ith Organization Your Problems?

Today the uppermost thought in the mind of every thinking hatcheryman is to lessen labor and increase percentage of hatch. Every iota of information leading to the production of more quality chicks at no increase in overhead, gains the eager attention of men and women everywhere in the hatching industry.

This announcement, therefore, comes at a very opportune time. It not only serves to impress the industry with the constant and careful research that is being continually conducted by The Smith Incubator Company, but also goes to show that this company does not hesitate to overthrow time-honored practices when such a course will open the way to more profit for the hatcheryman who uses Smith machines.

• • • •

Every hatcheryman who operates Smith Incubators *never fails to enthusiastically endorse Smith service.* It is admitted that a Smith Incubator is only a means to an end—to make more profit for the man or woman who makes a business of hatching chicks. This chick business is highly specialized—full of problems—subject to constant study and experimentation.

No one realizes these facts more keenly than The Smith Incubator Company, and this realization is borne out once again to the whole hatching industry when our Research Department says: "Hands Off on the Eighteenth Day!"

COMPANY

IO

consider a Smith Incubator merely as so much wood, metal and wiring. We look at it rather as a modern, scientific achievement for the production of the greatest number of saleable chicks at the lowest cost. Such an achievement could not possibly be represented in terms of materials. It must—and is—represented by the findings we have made—the facts we have discovered—which are gladly and freely passed along for the betterment of the hatchery industry.

Free Insurance

All purchasers of incubator equipment—Smith new or used, and used incubators of all other makes sold by us this year—will have their machines insured free of charge for the first year. This policy of The Smith Incubator Co. will represent a saving of many dollars to hatcherymen buying equipment from Smith this year.

After the first year the unpaid portion of the machine will be insured free by this company and if the hatcheryman desires, his paid-up equity can also be insured through The Smith Incubator Co. at a much reduced rate. In fact, it is about half the regular rate.

Owners of incubators, whether new or used, bought previous to this time, will be given the advantage of this same insurance saving as soon as their present insurance expires.

Just Mail this Card

of the death in the shell takes place on the 18th and 19th days. A study of these charts will convince you that at this critical period we should not break up the tray formation or jostle the eggs in any way.

"Yet, on the eighteenth day of your hatching period—the critical time of chick development—common practice has decreed that you should test the trays, throw out eggs, leaving 'holes' in the tray where the infertile eggs came out, and with some types of equipment completely rearrange all the eggs. You have seen this happen many times. The normal circulation of air in an incubator is based on the assumption that eggs fill the trays in close formation. This arrangement permits *a uniform circulation of cooling air around each egg*, and uniform temperature of each egg in the tray." (Vol. II, R. 1138.)

Turn to the Smith circular, Exhibit No. 16 (Vol. II, R. 1098-1101.) We reproduced the last page of this circular (Vol. II, R. 1101) in the beginning of this brief.

Not once in these circulars do we find any claim by Smith that separate hatchers come within the scope of his patent. Any person reading these circulars would undoubtedly be convinced that Smith felt that the separate hatcher was an entirely different and inferior type of machine, and an entirely different method of hatching. **Smith's claim in this lawsuit is directly the contrary to his published statements to the trade, when he had a contrary purpose to serve.**

That this separate hatching is advantageous and different is proven by the experience of respondents with hatches as high as 88% (Vol. I, R. 347), while the percentages secured by Smith according to his witness Taggart have ranged from 50 to 70%. (Vol. I, R. 53.)

POINT VIII.

CONSTRUCTION AND OPERATION OF HASTINGS' MUSKOGEE INCUBATOR PROVEN BY PETITIONER'S OWN WITNESSES AND EXHIBIT.

At the hearing of this case, counsel for petitioner were critical of the proof of the construction of the Hastings Muskogee incubator by reason of the drawings that were identified by Hastings, Lieber, Peabody, etc., as Exhibits 22 and 22-A. Our reply was this, which we repeat.

The conclusive answer and demonstration is that the Hastings Muskogee construction and operation are equally proved from petitioner's own witnesses and Exhibit drawing, showing that construction.* (Vol. II, R. 766-794.) The depositions of the petitioner's witnesses, Cory, Anderson, Shanafelt, Lieber, Hogan and Pitts together with their Exhibits A and B, the latter showing the Hastings Muskogee incubator, were introduced from the *Stone* case, *by petitioner*, where petitioner took these depositions and offered them into this case. We reproduce again Respondent's Exhibit B (Vol. II, R. 794), the Hastings Muskogee incubator. From this drawing, the description that appears on its face, and the testimony of these witnesses (Vol. II, R. 766-794), there is ample proof of the construction and operation of the Hastings Muskogee incubator, as we have described it and as our witnesses have testified. It consists of a single cabinet or room having a corridor M into which you enter through doors. On one side of the corridor M are egg chambers A supplied with air from a blower fan F driven by a motor E in the fan chamber B. The egg trays G are arranged in stacks in the egg chambers A. Air is supplied to these stacks from the fan F, passes downwardly through the stacks and returns to the pas-

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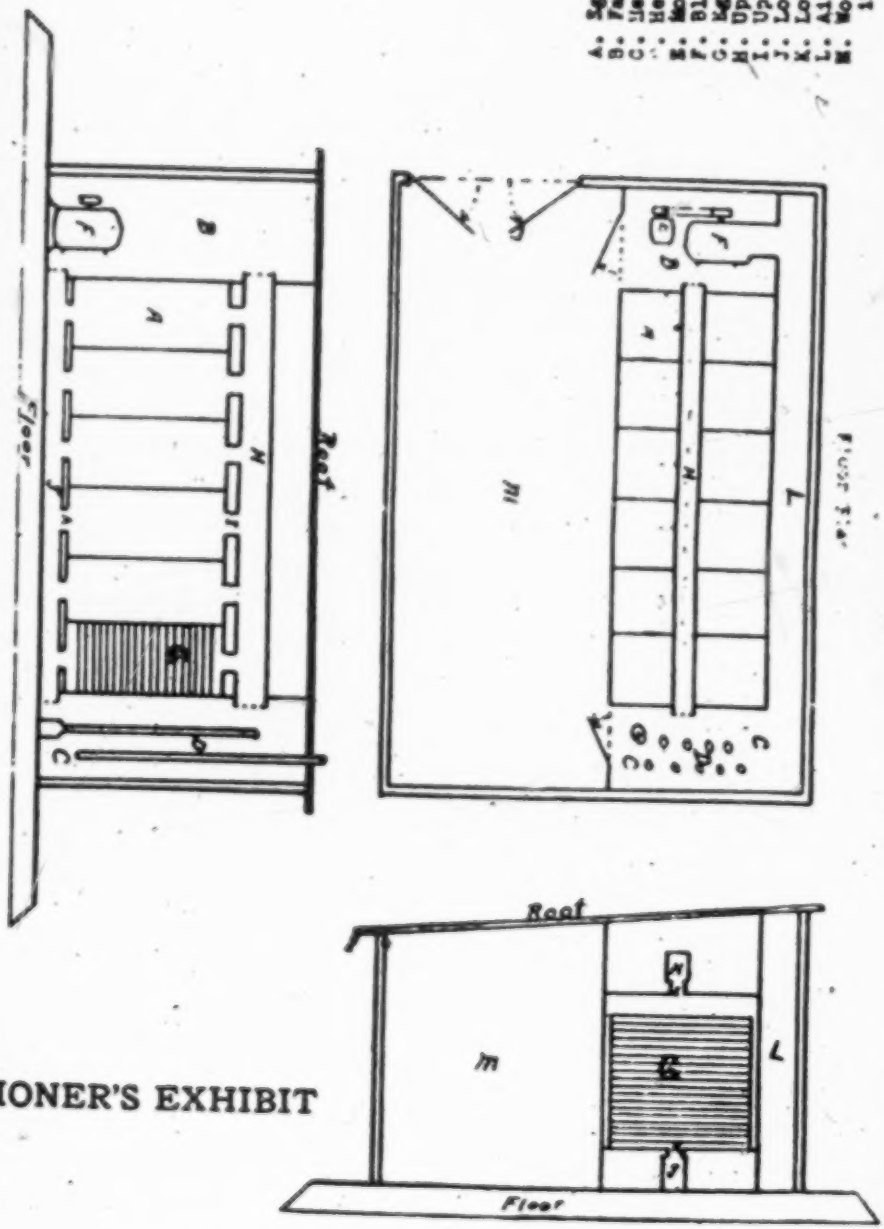
* Offered in evidence after the Hastings, Hickox and Peabody depositions had been taken by the respondents.

Exhibit "B" to deposition of Wm. G. Lester

A. Egg chamber
B. Fan chamber
C. Heating chamber
D. Heating pipes or coils
E. Motor
F. Blower fan
G. Egg trays in position
H. Upper air conduit
I. Upper lateral conduit
J. Lower air conduit
K. Lower lateral conduit
L. Air passageway from B to C
M. Work space in front of incubator



PETITIONER'S EXHIBIT

sageway J to the fan for re-use and re-circulation. The air is circulated through the passageway L over the heating pipes D in the heating chamber C for supplying artificial heat. This case can be founded on the anticipation by the Hastings Muskogee incubator upon the testimony of petitioner's own witnesses and drawings so described by them. *We take it petitioner cannot be permitted to deny or impeach his own witnesses and exhibits.*

In Smith's reply brief (page 3) he asserts that, if the Hastings incubator were actually made and operated as shown in the Hastings illustrated drawings prepared for the trial in the case before Judge Bodine and in this case, Hastings would be "established as the originator of modern mass incubation." Judge Bodine arrived at the same conclusion when he said:

> "In the present day description of this hatchery and the drawings now made, a complete anticipation is indicated."

We propose to demonstrate that these drawings are correct in two ways:

First, by Petitioner's Exhibit B drawing and petitioner's witness Lieber (Vol. II, R. 766-794) which show them to be the same.

Secondly, by the independent new witnesses, Peabody and Hickox, and the latter's photographs and contemporaneous published articles describing the incubator.

The proof of the Hastings construction and operation by petitioner's own witnesses, and Exhibit B from the *Stone* case, introduced in this record by petitioner (Vol. II, R. 766-794), is proof that cannot be challenged by petitioner. The drawings of the Hastings Muskogee machine put in by petitioner as Exhibit B (Vol. II, R. 794) show almost the identical construction in respondent's drawings Exhibits 22 and 22-A, which were identified by

Hastings, Peabody and Lieber. (Vol. I, R. 514, 600, 604, 625.)

Certainly Judge Bodine would have been persuaded that the drawings in the *Cooley* case of the Hastings incubator at Muskogee were correct and proven, if he had known that petitioner had such testimony and such an Exhibit adopted by it. Of course, the testimony in the *Stone* case came later, after Judge Bodine's decision.

The new proof in the James case was also directed precisely to this end. The new witness, Peabody, testified as to the installation of the electrical equipment and the blower and the arrangement thereof, as shown in these drawings. The new witness, Hickox, produced the photographs taken by him in the course of his duties as the agent for the Muskogee Electric Light & Gas Company. These photographs show the interior arrangement to be the same as in the drawings with the incubator in operation, show some eggs incubating and others hatching. One photograph shows the date of March, 1912, on the calendar hanging in the incubator. (Ex. 26D.)

When Peabody was shown this set of drawings Exhibits 22 and 22-A he testified:

> "This represents the general scheme that was employed in supplying warm, fresh air for this incubator. However, this diagram showing the thermostat here is not the one that I saw. The one I saw was more or less of a home-made affair that Mr. Hastings had rigged up himself. This looks like a more finished product than the one he had, but the general circulation of air and the general scheme of warming this air and introducing it through these racks is as was used in that incubator." (Vol. I, R. 600.)

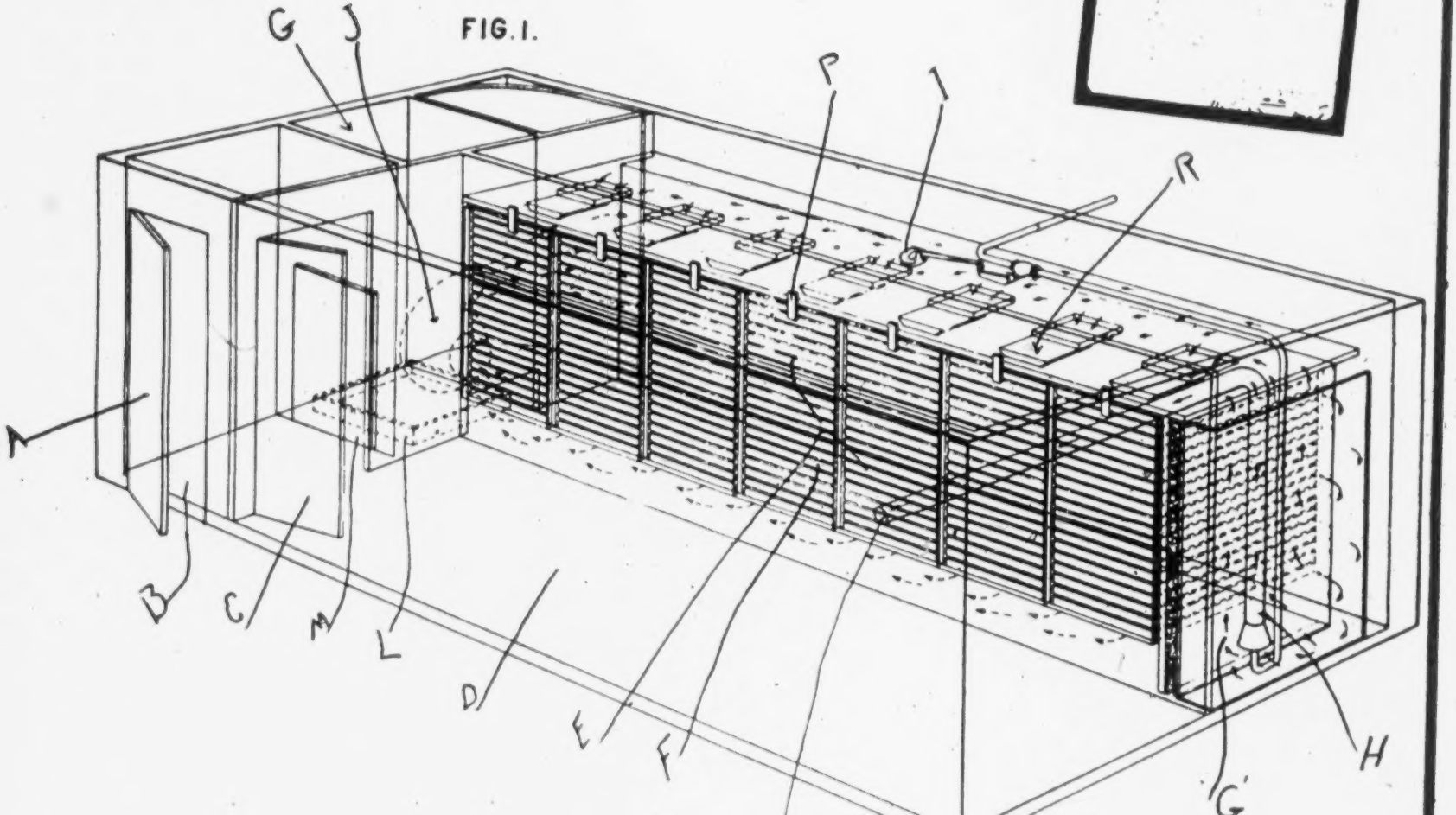
He was then asked to look at the photographs in Defendant's Exhibit No. 26, and he testified:

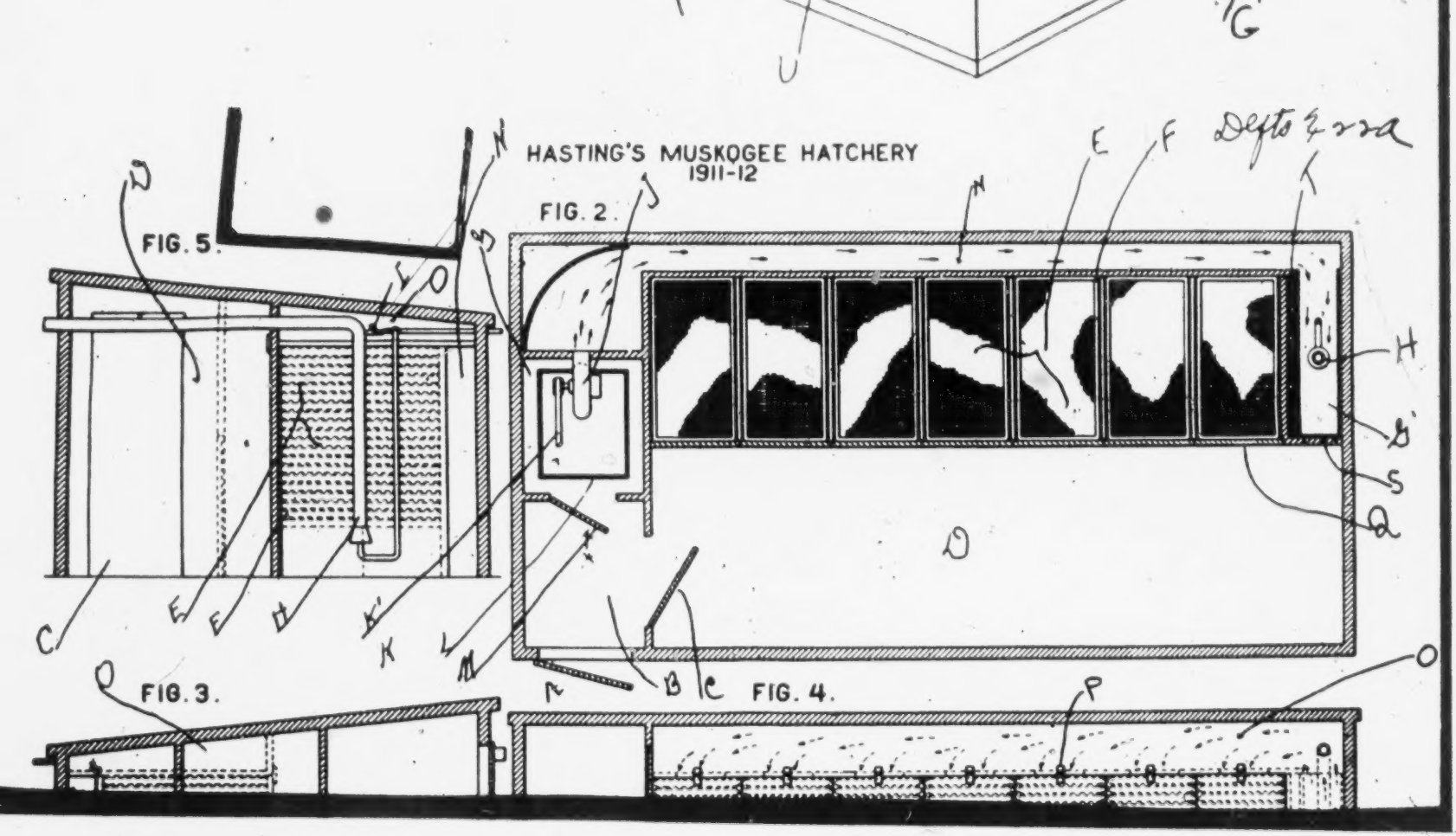
> "This is the installation that I saw there. This is the rather crude-looking switch and thermostat device

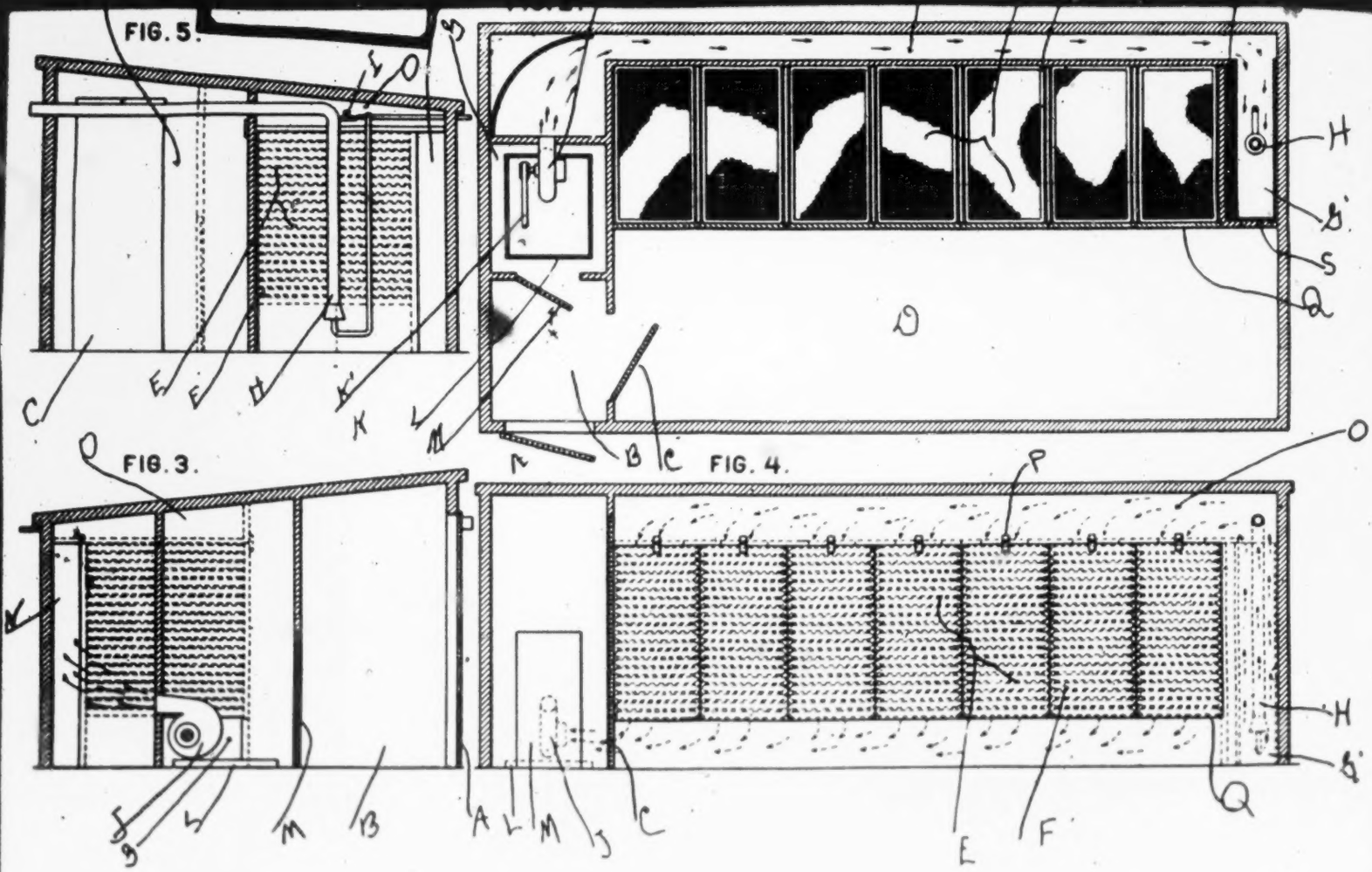
HASTING'S MUSKOGEE HATCHERY
1911-12

Defts' Exhibit 22

FIG. 1.




HASTING'S MUSKOGEE HATCHERY
1911-12
FIG. 2.
FIG. 3.
FIG. 4.
FIG. 5.



A. Egg chamber
B. Fan chamber
C. Heating chamber
D. Heating pipes or coils
E. Motor
F. Blower fan
G. Egg trays in position
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I. Upper lateral conduit
J. Lower air conduit
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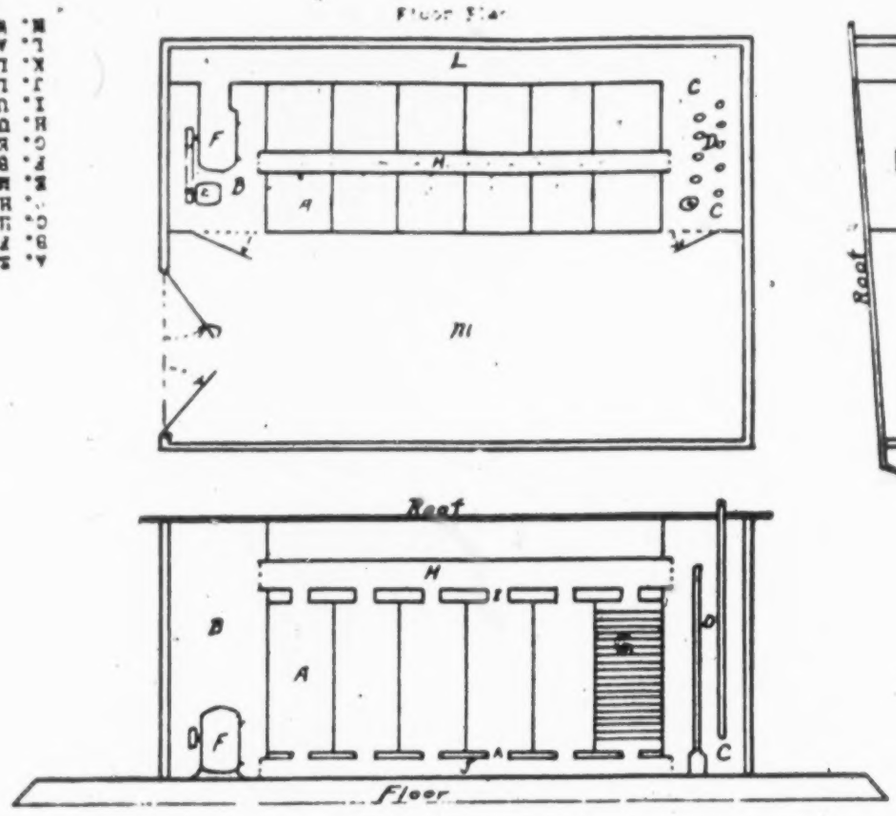
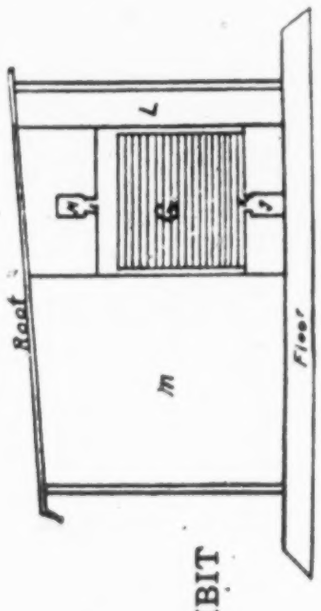
M. Work space in front of incubator



Cross section, front view.



Cross-Section, End View

Exhibit "B" to deposition of Louis G. Lerker

PETITIONER'S EXHIBIT

marked 'Figure 6, N. B. H.' I know that incubator was actually used and placed in operation. Yes, sir, it was." (Vol. I, R. 601.)

He thus ties together the record photographs taken under the direction of Hickox, who was also an independent witness, with his knowledge of the incubator as the electrical contractor, and he testifies the drawings were correct. Both Hickox and Peabody are new witnesses and supply the identification of the construction of the drawings by the record descriptions and record photographs made contemporaneously under Hickox direction of the Hastings Muskogee incubator. This supplies the deficiency of proof which Judge Bodine referred to.

As Smith admits that respondent's drawings 22 and 22-A, if proven, show that Hastings was the first in the art of mass incubation with a forced draft (reply brief page 3), and, as the new proof in this case conclusively supports these drawings, with dated records and contemporaneous photographs, our case is proved, whether you rely upon petitioner's witnesses and his Exhibit B or our drawings 22 and 22-A, as they show the same thing in substance.

Elsewhere petitioner takes the inconsistent position that the Hastings incubator was operated in a machine like the drawings, but that the eggs were all of one age in each compartment, although all of the compartments were in forced draft air communication with one another by a common air stream, and that the eggs in the different compartments were of different ages. This Court understands, of course, that we do not agree that the Hastings machine was so set, but even if it was, there was anticipation just the same. Petitioner thus reduces the issue before this Court to the determination of the sole question of whether, assuming for argument that Smith's sole objection to the Hastings prior use was true, namely, that the eggs were

the same age in a single compartment, but of different ages as compared one compartment with another, there still remains **the fundamental fact that egg compartments with eggs of different ages in them were in forced draft air communication with one another.**

We rely upon this Court's interpretation of this patent as the law of the case to the effect that it makes no difference in what order the eggs are arranged so long as the common body of air is so driven in a defined course that it passes over eggs of different ages over and over again, so that the heat of the hotter eggs will be conveyed to the cooler eggs and a substantially even temperature thereby maintained. That is what happened in the Hastings machine as petitioner now admits it operated.

The Hastings compartments were arranged side by side, with open tops and bottoms, and a single fan forcing the air in circuit through such tops and out such bottoms back to the fan, so that the common air stream was split at the top into separate streams passing through each stack of egg trays and these independent air streams were again consolidated at the bottom in a common air stream where they were remixed in the fan. *It is apparent that whatever heat came from the eggs in one compartment would be commingled with the air from other compartments and then redistributed to those other compartments so that there would be a transfer of heat from the hotter eggs to the cooler eggs.*

Therefore, it is conclusive from the reply brief of Smith that he admits two things:

(a) That if Hastings proved the construction according to the illustrated drawings in the Third Circuit before Judge Bodine, in the Court of Appeals and in this case, there would be anticipation. This was proved by his own witnesses and his Exhibit B. (Vol. II, R. 766, 794.)

(b) That we have so proved such construction but that the operation differs from Smith only in that the eggs are all of the same age in each compartment while differing in age in one compartment as compared to another. (Reply brief, pages 15-16.)

The answer to this last proposition is found in this Court's own interpretation of this patent that it makes no difference where you place the eggs of different ages or how arranged, if the common air stream moves over them of all ages in a single box;—that was Smith;—and that also was Hastings.

Petitioner's reply brief contains a grave error at pp. 15-16. It says that Hastings had all the eggs in each chamber of one age and with progressively increasing temperatures of the chambers as incubation progressed, citing pages 51-52 of the record. **This portion of the record was not Hastings' testimony, but Smith's man Taggart, who was testifying as to the old practice in small incubators.**

Smith is very careful in the arguments in his brief about different temperatures in the parallel compartments in the Muskogee incubator to omit always reference to the fundamental fact that, in the Hastings incubator, the forced draft could only circulate from a common fan through these compartments, so that whether the temperature in the compartments was the same or different the heat from the compartments was removed into a common stream of air and that heat was commingled with the common stream of air and again returned to the compartments *so that the heat of the hotter eggs would be conveyed to the cooler eggs.* Indeed, this feature of having a different temperature in parallel compartments is set forth in the Smith patent in suit where it repeatedly says that the temperature may vary from 100 degrees to 105 degrees, and in the trays 12 where the hatching eggs are located in that zone, the temperature must not exceed 105 degrees. (p. 1, lines 40-48,

Smith patent, Vol. I, R. 673.) **Smith had zone temperatures** and used a continuous circulating body of air to control those temperatures. Smith also used a slide for controlling the volume of this air passing through the compartments. See the slides in Figure 1 and Figure 3 for controlling the size of the valved opening 24, which would control the volume of air, particularly cold air, passing through the compartments and, therefore, the temperature thereof. That is what Hastings did, according to petitioner's own theory, in using his slides to control the temperature of the compartments in order to keep them in balance in conjunction with the continuous stream of air.

Smith's temperature varied from 100 degrees to 105 degrees, while he claims there was a variation in the Hastings Muskogee incubator. Petitioner is incorrect in stating that Lieber testified that there were different temperatures in each compartment as a standard practice of Hastings, for Lieber said:

> "I don't say he did that in every case, but it was so equipped so he could do that." (Vol. I, R. 627.)

Petitioner failed to quote that statement.

Hastings used the same body of air in a continuous defined circuit passing over these egg columns and that is what Smith did.

Lieber testified, both in the *Stone* case (Vol. II, R. 782) and later in this case (Vol. I, R. 627) that you could hatch in one compartment or all the compartments depending upon the number of eggs you have. This is also true of the Smith patent. As Smith acquired eggs he moved the older eggs downwardly and put the new ones in their place. As Hastings acquired eggs he moved the older eggs to the next position and installed the new eggs in their place. Lieber so testified as follows:

> "That is, he could start eggs in one compartment, carry on for a few days, and then move them to an-

other compartment and leave for a few days. And then move on for another period until they finally got down to the end. Yes, that is, if he was crowded for space, as new eggs came in he would put the eggs in the first one, and keep on moving them, and he would be putting eggs in the first compartment and taking chicks out of the last one at the same time. And in the intermediate compartments would be eggs further advanced in the incubation." (Vol. I, R. 627.)

POINT IX.

SMITH AND HASTINGS BOTH USED SLIDES TO CONTROL AIR VOLUME THROUGH THE STACKS OF EGG TRAYS.

Petitioner claims that, because Hastings had slides for controlling the amount of air passing through each compartment in its continuous circuit through the compartments and back to the common fan, this showed a difference from Smith. Hastings used these slides because his fan was at one end and the air stream had to be proportioned so that the compartment closest the fan would not get more than its share depriving the compartment furthest from the fan of its share of air. These slides were for the purpose of controlling the temperature by controlling the amount of air flowing in each compartment. Hastings knew, as his publications and patent application showed, that he must have a uniform temperature and that air driven in a blast was the way to get it. Therefore, he had to use slides to maintain uniform temperature. Lieber testified:

> "With that slide arrangement so that that hole in the top could be closed or opened as you wished—just according to the amount of air that he wanted in each compartment." (Vol. I, R. 605.)

Compare this statement with that in the Smith patent as to Smith's slides over the hole 24 for controlling air volume, where he says:

"Coils of heating pipe 23 are arranged in the space 21 to heat the air and more or less fresh air may be taken in through the *valved* opening 24 above the space 21 and this fresh supply of air may be charged with steam to a greater or less degree by means of a valve controlled jet or pipe 26 see Fig. 3." (Lines 36-43, p. 2, Vol. I, R. 674.)

So Smith likewise used slide valves 24 to control the flow of air and the temperature thereof in his compartments.

The Smith machine has different speeds at different places. (Pet's. Exs. 11A and 11C.) Therefore, petitioner's claim that the Hastings compartments would have different air speeds and temperatures due to the regulation of the slides of each compartment, is merely claiming what Smith himself had with different air speeds in the compartments, depending upon the loading of the compartments with eggs. Petitioner's charts of his own machine tests show his different air speeds and therefore different temperatures in his columns of eggs. (See Petitioner's Exhibits 11A and 11C, Vol. I, R. 680, 682.)

Petitioner says that the photograph 26-F was of an experimental hatch. That is true. "Poultry Journal" reported the first hatch at 85%. (Vol. II, R. 1298.) It also claims that the caption placed on the photograph by counsel is incorrect. That is untrue. Petitioner in his main brief tried to tell this Court that eggs could not be hatched anywhere except at one end. This photograph shows that eggs could be and were hatched any place, and the caption mentions this. The photograph 26-D shows that there was no expectation of having the lower trays hatch because every other tray was not taken out to make room for hatching which was the custom in the Hastings incubator. Removing every other tray was done to make room for the hatching chicks and a paper wall was placed around the tray to keep the chicks from falling out. This will be

seen in Exhibit 26-D just after page 34 and 26-D just after page 36. Both photographs 26-D show unhatched eggs and hatching eggs with hatched chicks. The hatching is identified by the paper walls around the trays to keep the chicks from falling out, but no such paper wall is shown around trays in photograph 26-D.

Note that the photograph 26-D following page 34 of respondent's brief shows a calendar of March, 1912. The calendar can be read more easily by referring to the original photograph in the original exhibit filed in this Court.

Petitioner tries to make much of the fact that some of these photographs were taken at different times. That was probably true but they do not deny that the photographs were taken in 1912 of the Muskogee incubator, which is the essential fact. The calendar in the photograph 26-D, opposite page 34 our main brief, fixes the date conclusively and that eggs of different stages were being hatched in that incubator in a single room with forced draft in March 1912.

POINT X.

STAGE INCUBATION AT MUSKOGEE CONFIRMED BY CONTEMPORANEOUS STATEMENTS IN THE HASTINGS FILE WRAPPER.

Petitioner's reply brief asserts that the Muskogee incubator was operated with eggs of different ages in each compartment and that the eggs were maintained at different temperatures. Aside from the fact that the witnesses, Hastings and Lieber, denied this, as set forth in our main brief, that portion of the file wrapper of the Hastings application written after the Muskogee prior use had taken place clearly shows that staged incubation was practiced and that it was *not* practiced in the form *now* claimed by Smith. Let us see what the contemporaneous written record before the Government by Hastings showed at a time when there was no motive to misrepresent.

On May 24, 1912, Messrs. Church & Church wrote thus to the Patent Office, that it had considered the application "together with a mass of data and information derived from a practical hatchery of large capacity which is being operated by the applicant."

Counsel for Hastings were particular in referring to the eggs of different stages being subjected to the mechanical forced circulation of air, but *nowhere did they state that there were different temperatures in different compartments.* It can be safely assumed that lawyers of their skill, seeking to get the allowance of a rejected application, would point out every difference such as this if it had existed.

That statement is entirely absent from this file wrapper and the effort of Smith to read it into this file wrapper *now* in his reply brief is without any foundation in fact. Is it to be expected that such lawyers as Church & Church, giving every detail of this hatchery, including an exhaustive quotation of the report of Hastings, would have excluded a feature of this sort and not mentioned it? Here is what they did say on May 24, 1912:

> "• • • he has by a painstaking and very costly series of experiments discovered that the temperature and gaseous stratification in the incubating chamber must be overcome by a mechanically forced circulation of the air which will insure a correct and uniform influence of the air upon all of the eggs in the incubating chamber, • • •" (Vol. II, R. 744.)

Again in their brief before the Board of Appeals on December 20, 1912, they said:

> "During the incubating process the eggs themselves, especially if assembled in large numbers close together, exert a most marked influence upon the surrounding air, both with respect to temperature and composition, and owing to their inherent temperature changes, they exert a most marked influence upon ad-

jacent eggs due to radiation. For example, during the initial stage of incubation, the eggs absorb heat whereby their temperature is raised, but during the final stages, the vital processes generate heat and in practice it is found that with vast numbers of eggs assembled in a single compartment and with eggs at all stages of incubation but very little extraneous heat need be supplied, because the eggs in the later stages of development supply the necessary heat for the eggs in the earlier stages of development.

"• • • The simple way in which applicant overcame the difficulty was through the provision of a mechanically operated air forcing means which would force a rapid circulation of air through the whole collection of eggs in the chamber and past the heater.

"• • • The claim of the application includes as its mechanical elements an incubating chamber adapted for the reception of superposed trays for eggs to be incubated, means for effecting a distribution of air uniformly to the eggs in the chamber, means for heating the air, and mechanically operated means for forcing a uniform circulation of air through all parts of the chamber and past the heater. • • •

"In the Hastings hatchery, a current of air is blown past each and every egg at the rate of thirty feet per minute and this rapidly moving air quickly bringing the temperature of the egg to approximately that of the air. **This method of heating keeps the temperature of the eggs in the advanced state of incubation down within a few degrees of that of the air,** the exact difference being regulated at will by adjusting the speed of the fan. When properly adjusted the **same blast of air used to heat fresh eggs does equally well for eggs in the advanced stages** just as the same temperature of the body of the hen incubates the eggs at all stages of development, without recourse on the hen's part to the 'hatching fever,' erroneously supposed to explain the higher temperature of eggs at a more advanced state of development." (Vol. II, R. 753-756.)

We particularly call this Court's attention to the following quotation and the words "**whole collection**":

> "The simple way in which applicant overcame the difficulty was through the provision of a mechanically operated air forcing means which would force a rapid circulation of air through the *whole collection of eggs* in the chamber and past the heater." (Vol. II, R. 754.)

This certainly teaches that the circulation of air was over *all* of the eggs of different stages of incubation.

Again, Church & Church say this, showing that the *different stages of incubation were in the same column of trays in the same compartment*:

> "The claim of the application includes as its mechanical elements an incubating chamber adapted for the reception of superposed trays for eggs to be incubated, means for effecting a distribution of air uniformly to the eggs in the chamber, means for heating the air, and mechanically operated means for *forcing a uniform circulation of air through all parts of the chamber* and past the heater." (Vol. II, R. 755.)

Note in this statement the words "a distribution of air uniformly to the eggs in the chamber." Here is the teaching of a single chamber and not a multiple chamber with different eggs in different chambers.

Church & Church then quote the supporting report of Hastings, where he said "a current of air is blown past each and every egg," and "When properly adjusted **the same blast of air used to heat fresh eggs does equally well for eggs in the advanced stages** just as the same temperature of the body of the hen incubates the eggs **at all stages of development.**" He further says "In the Hastings Hatchery temperature stratification is overcome by forcing through the hatching chamber a mechanically impelled blast of air. This rapidly moving air evenly distributed throughout the cross section of its movement by suitable

gratings, results in a more even distribution of heat within a hatching chamber holding many thousands of eggs than is secured in a single egg tray of the most perfect dead air machine. **In the practical plant the entire volume of air passes through the fan every thirty seconds.**" (Vol. II, R. 756.)

Do these teachings of the uniformity of temperature throughout the entire mass of eggs support Smith's claim that this file wrapper shows the use of egg columns of different ages in separate compartments at Muskogee at different temperatures? We think not.

POINT XI.

THE AUTHENTICITY OF THE HASTINGS BLOWER CONFIRMED BY PETITIONER'S OWN WITNESSES AND EXHIBIT.

Authenticity of the Hastings Blower.

In the reply brief and argument petitioner tried to deny that the Hastings blower found on the Hastain farm was genuine. (p. 11 reply brief.) This blower shown in photographs Exhibits 22 B, C, D, E and F (Vol. II, R. 1113-4) is claimed by petitioner not to be the blower that was substituted for the fan at the very beginning of the operation of the Muskogee hatchery by Hastings. Laying aside the fact that this was the only mammoth hatchery in the territory, that petitioner's own witnesses said it had a blower, and that Smith was satisfied to have his man Taggart buy the blower for $50.00, because it was the blower used in the Hastings incubator, what does the Record additionally show?

Peabody, the Westinghouse executive who had no interest in this case, testified that he was the man who installed the original fan, took it out and substituted the blower. (Vol. I, R. 599-602.) Certainly, a man of Peabody's special skill in electrical work, who was the electrical con-

tractor on the job, and who had no interest in testifying falsely, is to be believed. That accounts for the change and substitution of the blower for the fan by the man who had done the work as the electrical contractor.

Petitioner's own witness, Anderson, testified as to a change in the fan. (Vol. II, R. 769.)

Lieber, who owned the blower, said it was a "Sirocco" blower of the American Blower Corporation of Detroit, and that it was purchased early in 1912. (Vol. I, R. 614-615.) He accounted for this blower from the time it was used by Hastings in 1912 until it was located on his partner's, Hastain's, farm, where it was stored, saying "Now there is nothing left of it that I know of but the blower. That is the blower that was substituted for the fan originally. That blower is still in existence. It is out on Mr. Hastain's farm. I have had photographs taken of that blower lately." (Deft.'s Exs. 22 B, C, D, E and F, Vol. I, R. 607.) Hastings testified as to the substitution of the blower. (Vol. I, R. 516.)

It is significant that in the drawing produced by petitioner as Exhibit B attached to the depositions in the *Stone* case, which petitioner introduced into this case (Vol. II, R. 794), **it is a blower that is shown, and not a fan. It is called "F. Blower Fan."** We should say from this that petitioner is bound by its own Exhibit B, its own description thereon and by its own witnesses and by trying to buy the blower itself.

The photographs of the blower show the blower which was found on Lieber's farm when this testimony was taken, and it was the same blower that Smith's man, Taggart, tried to buy for Smith at Smith's direction in 1926. That is not denied. Taggart testified the size of the blower he saw in 1926 "was the same as it is now, 12 inches outside diameter." (Vol. I, R. 663.)

Does this look like there was no proof that this was the blower? If so, why did Taggart try to buy it for Smith? That act of petitioner has not been explained away. The Hastings prior use was the only one in the Muskogee territory; therefore, this blower must have been in the Hastings invention or else there was no reason for the attempt to buy it. Peabody said:

> "We installed the ventilating equipment for him and did the electric wiring. I can tell you what means were provided in the hatchery there for ventilating purposes. The idea was, of course, to supply a mechanical means of putting warm, fresh air through these egg compartments at the proper temperature in this commercial hatchery. The first installation we made was a propeller type ventilating fan. My attention is called to a photograph appearing on page 84 of the album which has been introduced in evidence in this case as Defendants' Exhibit No. 26, this photograph being marked 'Figure 2' with the initials 'N. B. H.' on it. That is the ventilating fan that we installed in this commercial hatchery for Mr. Hastings. It was made by the Emerson Electric & Manufacturing Company of St. Louis. Installation was made, approximately, in the Winter, Fall and Winter of 1911 and 1912. I can't designate the exact day or week or month, but within a period there of three or four months. Well, this fan is like many others that we bought from the Emerson Electric & Manufacturing Company through the Commercial Electric Supply Company in St. Louis, and the normal speed in such installation is 1150 R. P. M. I know that a change was made in the installation in connection with the ventilating or circulation of air in that incubator. Well, this propeller type fan was found not to exert sufficient pressure to force the air in sufficient quantity down through these egg racks and we changed this to what is called a sirocco blower. Well, as I said, this installation was made in the early Fall or Winter of 1911, and this change was made as I recall it—I could not fix the exact date,

but within six to eight weeks after the original installation was started up. I personally had something to do with the installation of the ventilating means in that incubator. I had supervision of it. I had mechanics working for me that did the actual work but I had supervision of it. I saw the incubator itself in operation. • • •

"This represents the general scheme that was employed in supplying warm, fresh air for this incubator. However, this diagram showing the thermostat here is not the one that I saw. The one I saw was more or less of a home-made affair that Mr. Hastings had rigged up himself. This looks like a more finished product than the one he had, but the general circulation of air and the general scheme of warming this air and introducing it through these racks is as was used in that incubator. • • •

"This is the installation that I saw there. This is the rather crude-looking switch and thermostat device marked 'Figure 6, N. B. H.' I know that incubator was actually used and placed in operation. Yes, sir; it was. • • •

"I could not tell you anything at all of the revolutions per minute of the motor operating the blower which I have referred to, because I do not have the same information that I have on this propeller type fan because it was a bolted-up outfit that was used for this purpose and it would all depend on the size of the pulleys used on the motor and on the blower. It might be anything from 600 to 1800 revolutions per minute. That blower was not furnished to Mr. Hastings by me or my company. It was a blower that we had furnished to Judge Lieber some time previous and adapted to this purpose. We installed it.

"Cross Examination by Mr. Ely.

"When this blower-fan was installed in the incubator it was put in the place of the other type of fan, the earlier type of fan. That is right. It was substituted therefor." (Vol. I, R. 599 to 601.)

Lieber said:

"A. Some years ago when the Buckeye people of Springfield, Ohio, I believe it is, anyhow, the Buckeye people were suing a man by the name of Cooley in New Jersey, I believe it was. I think it was Mr. Taggart who then represented them, sent me a telegram offering to pay me $50.00, I believe it was, for the blower.

"Q. Was that sale consummated or made?

"A. No, sir.

"Q. Why not?

"A. In my answer to the telegram I made a condition of the purchase that it was not to be used—not to be destroyed—and was to be used for exhibition purposes only." (Vol. I, R. 610.)

In the petitioner's reply brief he tries to infer that Hastings offered to sell out to Smith to conceal the prior use and that Smith declined. Petitioner's brief reads as follows:

"Also, if Smith had desired to suppress evidence of Hastings' prior efforts he might have made such a deal with Hastings when the latter called at Smith's Cleveland office in 1917 on his way to Tiffin, Ohio, when Hastings offered to 'co-operate' with Smith for a consideration (James R. p. 576 to 577)." (P. 11, Pet's. Reply Brief.)

The best reply to this misconstruction of the word "co-operate" is to quote Hastings' testimony on this subject:

"I do not remember the detail of any suggestions or [fol. 820] correspondence that I may have had with Dr. Smith at that time, except the general intent to co-operate with him in this field instead of competing with him." (Vol. I, R. 577.)

POINT XII.

RECORD REFUTES PETITIONER'S REPLY BRIEF AS TO HASTINGS' SUCCESS AND OPERATION.

Petitioner's reply brief summarizes (page 21) the testimony of a number of witnesses, but misinterprets or partially quotes their testimony. To correct these misleading and incorrect or incomplete statements, we are placing, one directly following the other, the statements from petitioner's brief and the quoted Record statements of the witnesses in refutation thereof.

Petitioner's Reply Brief Statement.

"Hickox testified that he had no connection with the enterprise and no one would have 'kicked' to him if the incubator had not worked properly. (James, R. p. 598.)"

Record Statement Rebuttal.

"I visited that incubator and saw it myself." (Vol. I, R. 586.)

"The activity of an incubator was quite unusual, and **one of my duties in my position** at Muskogee that I was charged with by the Byllesby people was to see that Muskogee and our company received as much publicity as possible. To do this **we naturally selected the unusual uses for electricity and gas and made photographs of them, wrote up stories and sent them out to the various electrical trade papers** and in that way received considerable publicity for Muskogee. To my knowledge there was no other hatchery comparable in size and capacity in Muskogee, Oklahoma, with that of Mr. Hastings' that I have referred to, at that time." (Vol. I, R. 587-588.)

"I first became acquainted with Mr. Hastings in the late Fall of 1911 and knew him for some months after that or up into the early part of 1912. I became acquainted with Mr. Hastings in the same manner that I became acquainted with any new man that came to

the city and engaged in any business in which he would use either electric current or natural gas that our company furnished; by contact with him in order to arrange with him for supplying such service as he would need in his business. I stated that he was engaged in the hatchery business." (Vol. I, R. 585.)

"I probably visited the Hastings' incubator five or six times." (Vol. I, R. 593.)

"And so far as the Hastings' business was concerned, to my recollection every time I was ever there there was business being done. People were either bringing eggs to be hatched or were taking away baby chicks, as I recollect it, from their own eggs or were purchasing baby chicks that were being sold there as freshly hatched." (Vol. I, R. 594.)

"In my opinion it was a going business." (Vol. I, R. 594.)

"Q. I will ask you whether or not during your life at Muskogee, Oklahoma, you ever heard any adverse criticism of this incubator either with respect to its being a practical operative device or failure while you were there in Muskogee?

* * * * *

"A. No, I did not." (Vol. I, R. 594.)

"After these pictures were taken I visited this incubator—oh, probably four or five times. * * * As to what period I visited this incubator, well, to the best of my recollection, it must have been during the time that he was hatching there, after he was in operation. I can't just say how far apart or how close together my visits were. I was interested in the thing because of its novelty and when I went by that way I stopped in. I went there several times during that period; I would say about a half a dozen times altogether, during the entire time." (Vol. I, R. 598.)

"I will say this, that according to our custom with any customer if anything would have happened to this enterprise so that it would have gone out of existence leaving any unpaid light or gas bill that I would have heard about it." (Vol. I, R. 598.)

Petitioner's Reply Brief Statement.

"Peabody testified (James R. p. 601) 'Whether it hatched eggs or not that would be something that would not come to me.' "

Record Statement Rebuttal.

"**I saw the incubator itself in operation.**" (Vol. I, R. 600.)

"**I know that incubator was actually used and placed in operation. Yes, sir; it was.** I did not hear any criticism either of Mr. Hastings personally or the operation of that incubator. • • • The only comment that I ever heard about the installation was that it was satisfactory." (Vol. I, R. 601.)

Petitioner's Reply Brief Statement.

"Lieber was so thoroughly disgusted with the whole enterprise that after it was all over he would have nothing more to do with any incubator whatsoever. His experience with the Hastings incubator soured him on all incubators—'one was enough for me.' (James R. p. 631.)"

Record Statement Rebuttal.

"In other words, I did not make money out of my investment in that incubator." (Vol. I, R. 607.)

"Q. Did you intend to give the impression that the operation in 1913 was successful?

"A. **So far as the operation of hatching chicks was concerned it was, but financially it was not.**" (Vol. I, R. 622.)

"Q. But Mr. Hastain was about the incubator quite a bit during 1912, wasn't he?

"A. Yes, sir, he knew more about it than anyone outside of Milo Hastings.

"Q. But he ran it in 1913?

"A. Yes, sir, he made it hatch but didn't make any financial success." (Vol. I, R. 624.)

"In connection with Mr. Dierfield's putting this $500.00 into the Corporation that I was asked about,

that occurred—it was after Mr. Hastings had quit the hatchery and before the next hatching season. And he was a brother-in-law of Mr. Hastain. He is the one that operated it in 1913, he and Mr. Hastain together." (Vol. I, R. 634.)

Petitioner's Reply Brief Statement.

"Pitts testified that the percentage of hatch was very low and 'he didn't have very good chicks, and the chicks that were hatched were rather weak.' (James R. 637.)"

Record Statement Rebuttal.

"Well, I think he came here around December. I heard the boys talking about it, and I think he started up in January 1912. I mean he started the operation of an incubator here in Muskogee about 1912, about January is my recollection." (Vol. I, R. 635.)

"I had occasion to visit that incubator that Mr. Hastings was operating. On several occasions. I remember one time we all had a Poultry Show here and we all went over one night and he wanted to show us around, and the reason I remember so well it was zero weather. That was 1912. The incubator was being operated at that time. It had eggs in it. **I never had any eggs myself placed in that incubator for hatching.** I was running two Cyphers myself and doing custom hatching besides. **I never placed any eggs myself in Mr. Hastings' incubator for hatching.** He ran it until May or June, I think, and then I think he left here. It has been a long time ago to remember things. **That incubator was operated throughout 1912.** Then he had a little poultry farm out here, and then I lost track of him. I think he left here. The next season I think Mr. Lieber operated it but I never visited it that year. I was in it two or three times after that cold night. **It hadn't been running long enough at that time to know what it would do when we visited it—the Association visited it.** I just remember going into a brick room and it was awful hot in there, and it had trays all

around in there. That is all I remember in there; going from zero to 103, I can remember very well. Eggs were in these trays. I saw Mr. Hastings there at that time. He was demonstrating the machine to this Poultry Association. **I didn't know then anything at all of the percentage of hatching of eggs that were placed in there. I was there later though and saw chickens hatching and eggs pipping and half out.**" (Vol. I, R. 635-636.)

"A. **That is all I know now. I know they hatched some chickens but what percent I don't know, but they did hatch chickens.**" (Vol. I, R. 638.)

"A. All I remember, the eggs were in trays, in tiers, and I don't remember which side, but the heat and the eggs was all in one room."

"A. Yes, I remember it so well, because it was zero outside and when we were in there it was 103.

"Q. Do you remember how the air current, or currents, were formed?

"A. I know that he used a fan." (Vol. II, R. 789.)

Petitioner's Reply Brief Statement.

"Brewer did not know whether the chicks he received were hatched from his own eggs or supplied from other sources and consequently he knew nothing of the percentage of hatch secured. (James R. p. 641.)"

Record Statement Rebuttal.

"I saw it a good many times; we hatched off quite a lot—had him hatch for us quite a lot of eggs there.

"**I suppose we had as many as two (200) or three hundred (300) eggs hatched.** By 'we,' of course, I mean my wife and I. I mean we would take eggs down there to be hatched, and I might add—I don't know if you want to know about it—**we sold the Company eggs to be hatched, too, and we delivered them these once or twice a week. That is, in addition to the eggs we had hatched ourselves. We had in the neigh-**

borhood of 200 or 300 hatched ourselves. And then we sold in addition, eggs to the Company to hatch. The total of eggs which we turned over to this incubator to be hatched, including the ones which we hatched ourselves and the ones we sold to them for hatching, well, I would think probably a thousand (1,000) or more; somewhere in that neighborhood.

"As to the result of the eggs which we turned over to be hatched ourselves, well, we considered it fair results, good results, satisfactory. Well, I believe that they claimed that they would give a 70 or 75% hatch, and we had been hatching with hens, and, of course, we only had a small plant of our own, and we received along about that percentage of hatches. Somewhere about that—from 70 to 75% of the eggs which we turned over to them would be hatched chicks. I think we continued to patronize this incubator throughout the season of 1912. I think so. We didn't hatch any very late ourselves. We kept on selling eggs until about the close of the season I think."

"I know other people brought eggs to the incubator to be hatched." (Vol. I, R. 639-640.)

"As to whether the chicks delivered to me by Hastings were the chickens hatched from those eggs, I am under the impression they were. You want me to tell why? Because we were handling some high priced chickens and we kept an eye on it closely. There were not so many Rhode Island Reds raised in this community at that time. That was kind of the commencement of the Rhode Island boom here in this town. But so far as I know, so far as my knowledge is concerned, the chickens we got from Mr. Hastings might have come from some eggs other than ours. Well, of course, they might have." (Vol. I, R. 641.)

The Court will understand that the percentage of a hatch depends upon the fertility of the eggs. The fertility of the eggs in turn depends upon health and quality of breeding of the flock. In some communities and in some seasons of the year, the fertility is lower or higher than in

others. For instance, the percentage of hatch in the Smith machine has been as low as 50%. Taggart testified the Smith machine ranged from 50 to 70%. (Vol. I, R. 53.) This is the same as the approximate percentage of Hastings. Taggart admitted that the skill of the operator was important. Certainly after these many years of experience with mammoth machines, the operators are of greater skill than those in the earlier years. Taggart testified in the *Snow* case before this Court:

> "A. *The results varied greatly with the incubator and the skill of the operator and of course with the condition of the eggs. In 1909, at the time I was especially interested in the work in college, a 50 per cent hatch on the average was considered good.* We would have individual cases, where it would run up well over that, but *the average hatch, if we got 50 per cent, we supposed it was good.*" (Vol. I, p. 63, Snow Record.)

He further said in this same case:

> "It is a safe average to say that all the Smith incubators out, if given reasonable attention, will average 65% hatching for the season."

He further added:

> "When I was working with incubators in college, a 50% hatch was considered good, that is, on the average." (Vol. I, R. 112, *Snow* case.)

This would mean that Hastings' average hatch of 50% was the average according to Smith's own witness that was producible from the eggs of that day, according to the standards of fertility of the flocks and eggs of that period. Of course, an incubator cannot produce a greater percentage of eggs than is possible according to the fertility of the eggs, and as during the Hastings period 50% was the average hatch, according to Smith's own man Taggart, certainly Hastings' performance in producing

the same 50% average shows that his machine was successful. In any event, it is close enough to 65% to show that it was a successful reduction to practice of the invention.

Petitioner's Reply Brief Statement.

"Campbell 'thinks' the incubator was a success, but he did not know how many chicks his parents received, or the percentage of hatch. (James R. p. 642.)"

Record Statement Rebuttal.

"I saw the incubator in operation myself. It seemed to me that it was made out of a—it was a room converted into an incubator; **was sort of a marvelous thing to people in those days, because seemed to me it was the very first one anybody ever walked inside of.** You opened a door and walked right in and **there were chickens and trays there of eggs.** It was a brick floor, I think, and he had some kind of a circulating system, and he had chickens hatching in there, thousands of them; an awful mass of eggs and chickens seemed to me when I was a boy; don't know how many there were but seemed like a lot of them." (Vol. I, Rec. 642-3.)

"I saw the incubator in operation several times. It must have been 1912 because we came here in August, 1911, and that was too late to hatch chickens and we hatched chickens the next year. I paid for having those chickens hatched. They were all our eggs that we had custom hatched. They were Rhode Island eggs I suppose. That is the only kind we had on the farm.

"I do not recall what kind of circulation that was in the incubator. **Was a terrible roar in there. I know it had some kind of fans.** Seemed most trouble with Hastings was mixing up his chickens. Most people complained of taking Rhode Island Red eggs there and getting Barred Rock chickens, and vice versa. I mean that was the current talk. He was all head over heels in his invention and he forgot about the business end of it. Don't think he ever made it pay."

"My trade was that of a carpenter. **From my experience as a carpenter, and my knowledge of the incubator business in connection with that one operated by my wife in which I help, I think this incubator was a success for those days. It hatched chickens undoubtedly.**" (Vol. I, R. 643.)

Petitioner's Reply Brief Statement.

"Cory's experience was disastrous. He never received a single chick from all the eggs he took in. It was a 'complete failure.' (James R. p. 45.) Respondent's excuse for this is that Hastings stole Cory's chicks (James Brief, p. 645)."

Record Statement Rebuttal.

"I was hatching eggs from the same flock at the same time, and selling eggs. From the eggs I hatched I got, oh, fair hatch, sometimes three-fourths hatch and *sometimes 50%*. So far as I know, there was no reason why my eggs wouldn't hatch, that is, there was not anything attributable to the eggs. I think not. The same eggs which I took to the hatchery, those eggs hatched for other people. Yes, sir, fairly so. **Yes, I had complaints from other people as to my eggs,** but no complete failure except the eggs I took to Mr. Hastings. I had fair results, or what I would say was fair results, from the eggs which I took to hatch elsewhere." (Vol. I, R. 645.)

"I went on the inside of the hatchery a few times. **I saw it then in actual operation.** I can't tell from memory how long it continued to operate. I don't know. **Well, it is my opinion that it operated throughout the whole hatching season of 1912.** I can remember the circumstances of Milo Hastings leaving, but when it was, I can't remember." (Vol. I, R. 646.)

"At that time I thought some of those eggs hatched.

"I heard that Mr. Hastings was operating sort of a breeder or place where he was raising chickens a little north of Muskogee. I don't know that. I heard it though. **At the time it wasn't my idea that Mr.**

Hastings hatched some of my own eggs and took them and put them out on this farm, but I might have thought it the next year afterwards after hearing talk. I did hear such talk as that: That he would take eggs in and tell the people that brought them in that they didn't hatch, and then he would hatch those eggs and take them out on his farm. I heard the talk." (Vol. I, R. 647.)

Petitioner's Reply Brief Statement.

"Shanafelt, an experienced poultryman, received a 'very poor hatch' (not more than 7 chicks from 200 eggs) in his one experience with the incubator (James R. p. 648), and testified that the poultrymen around Muskogee 'were very much disappointed' with the results Hastings obtained. They had been led to believe that the Hastings hatchery would be a very valuable addition to the enterprises of the town of Muskogee, but they were doomed to disappointment. (James R. p. 649)." (Pet.'s Reply Brief p. 22.)

Record Statement Rebuttal.

"As to the sort of a fan that I saw in there—I am not very clear, but to the best of my memory it was something similar to something, say about a fourteen inch electric desk fan, as you will see today; used also in [illegible]ns outside; and I believe it was stationary, and to the best of my memory it was a fan of that nature set in there for the purpose of circulating the air, or something.

• • • • •

"Of course I can describe the arrangement of the shed and everything he had in it. That fan is the type of what you call a 'rotary desk fan.' That is what I thought it was at that time, to the best of my memory, but that has been so many years ago and until recently my attention not being called to it. I stopped and studied over it and just recall the location of it and the general principle, and while, as I say, I may be mistaken, I was under the impression that he had

something like an ordinary desk fan, one of these fourteen inch fans, but I don't want to call the set-up of it right at that time. I wouldn't want to be positive. I like to be fair on those things." (Vol. I, R. 649-650.)

"I went into the Hastings Incubator and looked at it. That was where I saw this fan arrangement that I spoke of. As to its being just a similar sort of a fan as the exhaust fan that you see in a movie house, for instance, I can't recall it that way. My memory is not right clear on it but I was under the impression that when it was set up—forget whether it had some sort of funnel for the fan or the fan was setting up on a shelf, to circulate the air. The machine was in actual operation when I saw it there. **I don't know whether it was hatching chicks or whether it had. Mine may have been one of the first batches put in. I know it was right in its infancy, when it first opened up that the various breeders decided to put some in to see what it would do, and we were anxious to help him get started and going. I know that he did actually hatch chicks in that incubator, regardless of the percentage of the hatch, I am sure, at that time, I got—seems to me it was two or three chickens out of my batch that were white chickens and I was breeding black chickens. I know it hatched some chickens.** In other words, it may have been there was something wrong with the handling of the eggs, so that when you went to get the chicks which had been hatched, you got chicks of a different breed from the eggs you left with Mr. Hastings to be hatched, I wouldn't say. I know there was something wrong with it. I don't know what it was. I am not an Incubator Expert." (Vol. I, R. 653-654.)

"Q. That machine was operated throughout the hatching season of 1912, wasn't it?

A. *I am pretty sure it was.*" (Vol. I, R. 655.)

Petitioner's Reply Brief Statement.

"Ward's testimony is that Hastings never got over 50% hatch. In other words, Hastings high point was 50%—not his average as respondent James would have

it believed. His averages must have been very low if 50% was his high. (James R. p. 657)." (Pet.'s Reply Brief, p. 22.)

Record Statement Rebuttal.

"I am positive that from my visits to this plant where Mr. Hastings was operating, that the thing was actually in operation and did hatch eggs, regardless of the percentage of the hatches. Yes, sir. And that was throughout the hatching season of the two seasons that I remember, and I think it was in 1911 and 1912." (Vol. I, R. 661.)

Cory testified eggs hatched by him on the farm at that time were getting 50% hatches, saying:

"From the eggs I hatched I got, oh, fair hatch, sometimes three-fourths hatch and sometimes 50%." (Vol. I, Rec. 645.)

"Poultry Culture" article reported an 85% hatch of the Hastings machine:

"Although temperature and humidity controls were convincing to the inventor, the Muskogee public waited dubiously for Mr. Hastings' first hatch and it was not until *164 lively youngsters broke forth from 192 fertile eggs,* (250 placed in machine) that local faith in the big incubator became general. Our last report finds 158 of these chicks a week old and without an ailing one in the flock, five weak or defective members having been killed during the first three days and one since drowned in a water pail." (Our main brief, p. 56; Vol. II, R. 1298.)

Petitioner's Reply Brief Statement.

"Anderson took from 150 to 200 eggs to the Hastings hatchery, and got 5 chicks. He said, 'I got disgusted and quit' (James R. p. 769) because he took fertile eggs to the hatchery and received no results (p. 770)." (Pet.'s Reply Brief, p. 22.)

Record Statement Rebuttal.

The witness was referring to the first fan, which gave insufficient air, that caused the installation of the larger fan or blower by Peabody. Taggart later tried to buy this blower for Smith. The early failure to hatch with the first fan was admitted candidly by Hastings, but he got the results with the later blower during the rest of the season, showing he understood what to do to practice the principles of his invention. This testimony of Hastings, Peabody, Lieber and others establishes the fact that the blower of Exhibit 22 B, C, and D was installed.

"A. The first fan that was put in was a fan similar to what we see in the restaurants, to drive the hot air out; later on there was a large rotary fan, like you might have in your office, was the only fan I saw. The rotary fan, as it revolved, would throw the air to one side and as it would come back, would throw to the other. I never saw the blower they had in, not to my recollection." (Vol. II, R. 769.)

"Q. The means of conducting the air and forcing the air through the incubator, was changed several times?

"A. Yes, sir.

"Q. You stated there were certain changes made, and these changes took place in the early part of the season, because you stopped paying attention to it?

"A. When I got disgusted I quit paying attention to it." (Vol. II, R. 770.)

"Q. Did you, in company with others, visit the Hastings Hatchery during this show?

"A. I did.

"Q. Were they operating at that time?

"A. Just started." (Vol. II, R. 770.)

Petitioner's Reply Brief Statement.

"Hogan took a few chicks in payment for cleaning some clothes but knew nothing about the results secured at the hatchery. (James R. p. 787)." (p. 22 Pet.'s Reply Brief.)

Record Statement Rebuttal.

"Q. Did you have any experience or business dealings with the hatchery?

"A. Well, I bought baby chicks from them.

"Q. How many did you buy?

"A. I could not say, it has been so long.

"Q. Do you remember the price you paid?

"A. No, I could not say, I just remember getting the chicks. I was there several times, I could not say just how many, just a few, probably fifty." (Vol. II, R. 786.)

POINT XIII.

REPLY TO PETITIONER'S OBJECTION TO "THE DOLLAR HEN."

The broad interpretation now given to the Smith patent makes "The Dollar Hen" a complete anticipation. Smith's only objection to "The Dollar Hen" being a complete disclosure is that it only teaches the use of egg compartments having eggs of different ages in the different compartments, according to Smith's interpretation of this publication. Smith further says that his interpretation is confirmed by the fact that this was the practice followed by Hastings at Muskogee. He says:

> "The fact that in his later installation at Muskogee, Hastings did this very thing, shows that this was the procedure which he had in mind when he penned 'The Dollar Hen.'" (p. 4, Smith's Reply Brief.)

So, we find "The Dollar Hen," upon Smith's admission, anticipates by its publication the Smith patent because this Court has said that it makes no difference in what order you arrange the eggs so long as all of the eggs of different stages of incubation are in the path of a common air stream. What difference would it make in the transfer of heat from hotter eggs to cooler eggs if the eggs are arranged according to age in horizontal zones, as Smith

claims Hastings did, as compared with arranging the eggs according to age in vertical zones as Smith taught, if, in both cases, the common air stream passes over all eggs of all ages? This question has already been answered by this Court when it said it made no difference how the eggs were positioned.

In the *Waxham* and *Snow* cases, the eggs were placed in irregular order (sandwiched with hot and cold) and this Court held that this was still within the Smith patent. So, we rely upon "The Dollar Hen" and the Hastings prior uses being an anticipation in view of the fact that the only difference petitioner ever claims is that the eggs in different stages were in separate compartments subjected to a common air stream so that the heat of the hotter eggs could be transferred to the cooler eggs. We quote from "The Dollar Hen" as follows:

> "The writer now wishes briefly to describe the plan of construction and operation of a *new type of hatchery*, the success of which has recently been made feasible by inventions and technical knowledge hitherto unavailable. The plan of the hatchery is on that of a cold storage plant as far as insulation and general construction go. The eggs are kept in bulk in special cases which are turned as a whole and may rest on either of four sides. **At hatching time** the eggs are spread out in trays in a special hatching room which is only large enough to accommodate chicks **to the amount of one-sixth of the incubator capacity, for twice a week deliverings, or one-third if weekly deliveries are desired.**
>
> "There are no pipes or other sources of heat in the egg chambers. *All temperature regulation is by means of air heated* (or cooled as the case may be) outside of the egg rooms and **forced into the egg rooms by a motor driven cone fan, maintaining a steady current of air,** *the rate of movement of which may be varied at will. The air movement maintained will always be*

sufficiently brisk, however, to prevent an unevenness of temperature in different parts of the room. * * *"* (Pages 104-5, Respondent's Ex. 13; Respondent's Main Brief, pp. 15-16.)

This quotation shows that no matter how Hastings proposed to arrange the eggs, they were subjected to a common air stream for the purpose of heat transfer from the hot to the cold eggs and the maintenance of a uniform temperature so that mass incubation could be practiced through the use of a forced draft for this purpose.

Smith's reply brief argues that it was the common practice at the time of "The Dollar Hen" publication and the Hastings prior use to set all of the eggs at one time and not at intervals. *This record flatly refutes* this statement in Smith's reply brief. It is noted that counsel for Smith did not cite any record reference to support this statement because Smith's own expert witness, Taggart, admitted that setting eggs at different stages in the same compartment was an old practice common amongst farmers and hatcherymen prior to Smith. He said:

"Prior to 1915, farmers who had incubators of the single tray type may have repeatedly put eggs of different ages, different stages of incubation, in the same tray, in the same incubator, and subjected those eggs to conditions of heat, moisture, ventilation and exit of foul air.

"I know it was not the practice; it was not the custom, and it was not the recommendation of the manufacturers at all. I do not deny that it was done. I have done it." (Vol. I, R. 164.)

"The use of air circulation of some sort, the use of fresh air and the use of letting out foul air, the use of moisture and the use of heat, were all elemental facts applied in incubation prior to 1915. The conservation of moisture by [fol. 240] regulating the ventilation openings was one of those things that a man did when he had an incubator prior to 1915." (Vol. I, R. 165.)

The prior art in this record shows that it was common practice to set eggs at different stages. Meschter, No. 347,946, lines 33-48, p. 2, Vol. II, R. 961; McAslan, No. 540,107, lines 10-15, p. 1, Vol. II, R. 970; and Bell, No. 691,837, Vol. II, R. 974, in which a single compartment contains eggs of different ages arranged in a stack of trays. This last specification says:

> "It is furthermore designed to provide for effectively ventilating the interior of the device, so as to preserve a proper temperature for the unhatched eggs and also for the recently-hatched chickens, and at the same time prevent the incubator from being chilled too rapidly." (Lines 14-21, p. 1, Vol. II, R. 974.)

Perkins, No. 798,697, shows mammoth incubation with eggs of different ages. The specification says:

> "This invention relates to an incubator which is more particularly designed for hatching eggs continuously on a large scale.
>
> "The objects of this invention are to produce an incubator of this character in which the egg-trays are moved intermittently from the time they enter the machine through a succession of compartments in each of which the temperature is regulated to suit the requirements for hatching the eggs at that particular time; * * *." (Lines 8-18, p. 1, Vol. II, R. 980.)

This Perkins patent further says:

> "In the operation of the incubator the carrier is advanced the extent of one tray-space every twelve hours and a new frame and egg-laden tray are placed upon the carrier after the same has been thus advanced." (Lines 85-89, p. 4, Vol. II, R. 983.)

Stulik German Patent No. 155,917, of 1901, says:

> "In connection with the incubating (hatching) processes hitherto used in which the different compartments of the incubator were filled in batches and in which the batches of eggs placed in the incubator at

different times were treated simultaneously, not sufficient attention has been given to the maintenance of a uniform temperature throughout the entire incubator space." (Lines 1-7, p. 1, Vol. II, R. 1011.)

This Court has found that this patent did disclose the "simultaneous treatment of the batches of eggs placed at different times in the incubator," when this Court said:

"The German patent, Stulik, No. 155,917, issued in 1901, disclosed the arrangement of trays of eggs in **staged incubation** in an enclosed column or stack, with the endothermic eggs at the bottom." (*Smith v. Snow*, 294 U. S. 16, Pet.'s Ex. 2, p. 12, Opinion.)

The Court also found:

"Other patents named, as Winkler, No. 286,756, of 1883, and Zimmer, No. 1,075,747, of 1913, show types of **staged incubation.**" (p. 12, *Smith v. Snow*, Opinion in Pet.'s Ex. 2, 294 U. S. 17.)

This Court also found that a publication of 1867 disclosed "**eggs in staged incubation** were placed in a closed room **heated by hot water pipes**, but without other means of **producing currents of air.**" (*Smith v. Snow*, 294 U. S. 17.)

In view of the fact that petitioner's witness, Taggart, admitted that it was common practice amongst farmers to put eggs of different ages in the same incubator and this Court has found that this was disclosed repeatedly in the art, petitioner can hardly say, as it does in his brief, that "the universal practice at the date of this publication was to set all the eggs in an incubator or egg chamber at one time." (p. 4, Pet. Reply Brief.) It further says as to "The Dollar Hen" that this publication must be read in the light of the knowledge of the art at the time of its appearance. (p. 4, Pet. Reply Brief.) That art, as this Court has found, and as this record additionally shows by practical witnesses, customarily used eggs in different stages

of incubation in a single compartment for the very good reason that there would not be enough eggs from flocks of the farmer to completely fill up the incubator at one time. (Petitioner's witness Taggart, Vol. I, R. pp. 164-5.)

This Court found that stage incubation was old before Smith. It also found that forced draft was old before Smith. (294 U. S. 16, 17.) It sustained the Smith patent on a combination of those two. **But that combination was first suggested and made by Hastings and not by Smith, as shown by the proof herein.**

"The Dollar Hen," in the light of this custom practice of stage incubation, shows that Hastings contemplated not only this established practice but the obvious necessity for it because the greater the number of eggs handled, the more difficult it is to get them all of the same age at the same time. It is almost inevitable that the thousands of eggs would have to be of different ages.

The next objection to this publication in petitioner's reply brief is that the "Poultry Culture" article of Hastings recognized the difference in temperature of eggs of the same age in the compartment and that, says petitioner, is what Hastings referred to. (p. 5 Petitioner's Reply Brief.) A reading of the "Poultry Culture" article, Vol. II, R. 1115-16, 1298) shows, however, that **the quotation taken by petitioner referred to stacks of eggs of different ages which had been used prior to Hastings unsuccessfully because of the heat problem and, therefore, Hastings used the forced draft to solve the problem.**

The "Poultry Culture" article, instead of referring to different heats due to the eggs of the same age, *was referring to the problem of different heats of eggs of different ages,* as the context clearly shows, because, later, the "Poultry Culture" article says: "While this provision for varying the air temperature at different stages of incubation is requisite to careful work, it is not as necessary

with the forced draft hatchery as with dead air incubators, because the moving air adds to or removes heat from the eggs with great rapidity. Because of this fact, *eggs at all stages can be placed in the same trays of the Hastings Hatchery with little or no injury.* Mr. Hastings hatched several thousand eggs under such conditions in the Brooklyn Plant last year." (Vol. II, R. 1116.)

How can petitioner say that this article in 1913 was referring to eggs of the same age having different temperatures when the article specifically teaches the use of the forced draft fan to overcome the problem of heat because of eggs of different stages of incubation?

Petitioner's reply brief says that Hastings admitted "The Dollar Hen" was an impractical poultry book. (p. 6, Pet. Reply Brief.) That is incorrect. The record (Vol. I, p. 578) shows that he actually testified thus:

> "The book entitled 'The Dollar Hen' contained a great deal of practical information, and contained considerable speculative discussion of further development in the poultry industry.
>
> "Q. I call your attention to the top of the third column of the first page of the Country Gentleman article, where it says: 'Ten years ago, I wrote an impractical poultry book.'
>
> "A. I see the statement. May I add to that statement, by saying that ten years ago, at that time (referring to 'The Dollar Hen'), **I made statements concerning incubation which were considered impractical at that time, and were so looked upon by the poultry journalists, but that they were prophetic, in many respects excellent indications of later developments in this method of incubation and also other features of the Poultry Culture.**" (Vol. I, R. 578.)

Is this the testimony of a man who says that his proposals were impractical?

Petitioner's brief says that Hastings admitted that Judge Westenhaver was correct in discarding "The Dol-

lar Hen." This again is untrue. What Hastings actually testified to was the following:

> "As to whether Judge Westenhaver was correct in the Wolff case, when he said that 'The Dollar Hen' article 'merely describes a process for maintaining temperature in cold storage and suggests how it may be applied in a hatchery,' he is correct in that being the essence of germination of my idea of describing and equalizing the stratification of temperature in a room by means of a forced draft from a fan. He is correct when he says the article 'Merely describes a process for maintaining temperature in cold storage and suggests how it may be applied in a hatchery.' He is correct when he says in the same opinion 'It does not purport to describe an apparatus or ever to have been put to any use.' " (Vol. I, R. 540.)

It is obvious that Hastings made no claim that his incubator had been put to use prior to writing "The Dollar Hen."

POINT XIV.

REPLY TO THE PETITIONER AS TO THE DAVIS HATCHERY.

Petitioner claims that respondent was in error in stating that the Davis incubator was built and operated in the season of 1910-1911. That statement is true, as the following testimony of Hastings shows:

> "I built that incubator beginning in the late months of 1910, and built it early in the winter of 1910 and 1911, for operation in the hatching season of 1911. It was operated by me during the hatching season of 1911." (Vol. I, R. 506.)

Petitioner complains that the pamphlet issued by Hastings called "The Million Egg Incubator" for the purpose of raising capital for a larger incubator should not be accepted because there was an error in stating the capacity of the

incubator, and that the testimonial letters in the pamphlet should not be believed.

Such "mistaken statements of immaterial facts" and such errors relating "to the degree of efficiency of an invention" do not render a patent void. *Walk. on Pats.* (6th Ed.) Vol. 1, Sec. 218, pp. 291-2; *Electric Smelting & Aluminum Co. v. Carborundum Co.*, 102 F. 618 (C. C. A. 3). Neither would such errors defeat a prior use.

In *Corona v. Dovan*, 276 U. S. 358, 374, incorrect affidavits as to the use of the goods were filed. This Court said:

> "Hence the affidavits, though perhaps reckless, were not the basis for it or essentially material to its issue [the patent]. The reasonable presumption of validity furnished by the grant of the patent therefore would not seem to be destroyed."

It follows that the Hastings prior use is not defeated by the statements referred to.

Petitioner did not call the writers of these letters in rebuttal, as it could have.

The pamphlet is relied upon by us as showing that the Davis use was sufficiently successful for Hastings to use it as the basis for publicly advertising for more capital to build a bigger incubator. No man would rely publicly upon a failure to encourage capital to finance a bigger failure. That runs contrary to the experience of every man.

It is significant that Smith did not call a single witness to testify that the Davis prior use was a failure. Smith was not called to deny that he had ever heard of the Davis prior use or this publication, or the Hastings-Muskogee prior use and publications. Smith, as a matter of law, is presumed to have known of such publications because the Statute provides that such publications will defeat a patent. Smith was not called to rebut that presumption.

In petitioner's misstatement as to the construction of the Davis machine, great emphasis was made in petitioner's argument that the Davis machine was torn down and thrown in the trash. Unfortunately, for petitioner, this is not a correct statement of the facts or the real reason for the dismantling of the Davis machine. The incubator built at the Davis roadhouse in the cellar was so much larger than the door giving access to the room in which it was built that it was necessary to dismantle the incubator when the Davis roadhouse failed; it had no relationship to the incubator. When this roadhouse was shut and dismantled, it was necessary to get the incubator out. Davis was no longer able to finance and promote the incubation business as his other business had failed and in the financial disaster the Hastings incubator was carried down in the crash. This is hardly the failure of the incubator and is hardly the scrapping of the incubator on its own defects rather than the inevitable result of Davis' financial disaster. It is significant that Davis and his wife have testified as to the success of this incubator and that it was not thrown away because it was a failure. **It is significant that petitioner did not call a single witness herein to refute the success of the Davis incubator.** The preponderance of the evidence is in favor of the success of the Hastings incubator at Brooklyn. The Court below so found on the weight of the evidence.

Petitioner's reply brief makes the extraordinary claim that Hastings, after he left Muskogee, later admitted that he built a machine in Ohio closer to the Smith-Buckeye machine than his previous machines. There is rebuttal proof in this record to such claim that Hastings so testified. The misleading construction of his testimony is refuted by the testimony itself, which we quote:

> "I then went to Tiffin with Mr. and Mrs. Hoppel. She had been the one interested in operating the hatchery, and Mr. Hoppel desired me to come there and

take over the operation for the reason of relieving his wife of work he did not wish her to continue. I built some hatching compartments in a building that was the adjoining room to the incubation rooms that they had, and did operate in it successfully. At Hoppel's plant I tried out a method of hatching very much more like the Smith Buckeye devices than I had used in the past, but the reason was that Mrs. Hoppel had seen the Smith Buckeye devices and **she believed me to be the original inventor of that type of incubation**, and therefore did not conceive that she had no right to have such machine built by me. She wished the construction to be of the type it was made, because that impressed her as being a construction that she wanted to use because it was more similar to incubators she had seen in operation." (Vol. I, R. 577.)

Petitioner complains that the Hastings 1911 application does not teach staged incubation, where it refers to overcoming unevenness of temperature. (Vol. II, R. 731-2.) It is apparent from the previous publication "The Dollar Hen" that Hastings knew of the problem of unevenness of temperature that came from eggs of different stages of incubation because it said:

> "There are no pipes or other sources of heat in the egg chambers. All temperature regulation is by means of air heated (or cooled as the case may be) outside of the egg rooms and *forced into the egg rooms by a motor driven cone fan, maintaining a steady current of air*, the rate of movement of which may be varied at will. The air movement maintained will always be sufficiently brisk however, to prevent an unevenness of temperature in different parts of the room." (Pages 104-5.)

It is further apparent that the words "unevenness of temperature" meant this because in "Poultry Culture" publication it referred to the differences in temperature in columns of eggs of different ages and the use by Hastings at Brooklyn of a forced draft, as well as at Muskogee, for overcoming this problem.

Again the Court has found that at that stage of the art, stage incubation with eggs of different ages was a known custom which is confused in the record by Taggart, etc. The application must be read in the light of the known problem and practice in the art: the forced draft propounded in the application was for the solution of this problem.

POINT XV.

TITLE: EXCLUSIVE LICENSEE, THE BUCKEYE INCUBATOR COMPANY, A NECESSARY* PARTY, IS ABSENT: SMITH HAS NO TITLE TO SUE IN THE EXCLUSIVE FIELD OF THE LICENSEE-ASSIGNEE, IN WHICH FIELD RESPONDENT OPERATES.

Facts.

We raise a question of jurisdiction. Smith first assigned his patent to The Buckeye Incubator Company. Later, The Buckeye Incubator Company re-assigned it to him. (Vol. II, R. 715.) Simultaneously with this latter assignment Smith executed this grant of the Smith patent to The Buckeye Incubator Company:

> "in consideration of One Dollar ($1.00) in hand paid, and other valuable considerations, does hereby give and grant unto The Buckeye Incubator Company, a corporation of the State of Ohio, having an office and place of business at Springfield, Ohio, its successors and assigns, **the full and exclusive right, liberty and license to make, use and sell in and throughout the United States and the territories and possessions thereof incubators embodying the inventions shown, described and claimed in said letters patent** and each of them, and any

---

* Now that we have the opportunity of an additional brief, we deem it proper to call the Court's attention to this question. We do not believe the Court need consider it as we feel you will arrive at the same conclusion as the Second Circuit. It had the question briefed before it, but found the Hastings prior use anticipated the patent.

improvements now or hereafter owned by the licensor." (Vol. II, R. 716, Pltf.'s Ex. 33.)

Simultaneously with this assignment and license, a contract was entered into (Pltf.'s Ex. 34) which divided the patent into two parts, each party taking exclusively one part. This contract reads as follows:

> "**Said Smith agrees**, for himself, his heirs, and assigns, **not to make, use or sell, or permit to be made, used or sold by others than the Company under said patents, any incubators of a total capacity up to twenty-five thousand (25,000) eggs**; it being understood that the said Smith retains his exclusive rights for making, using and selling incubators having a total capacity of twenty-five thousand (25,000) eggs and over. **The Company, for itself, its successors and assigns, agrees not to make, use or sell, or permit to be made, used or sold by others any incubators under said patents of a total capacity between sixteen thousand five hundred (16,500) eggs and twenty-five thousand (25,000) eggs.** It is the purpose and intent of this agreement that the Company shall hereafter in the United States and Canada, have the exclusive right to manufacture incubators under said patents up to and including a capacity of sixteen thousand five hundred (16,500) eggs, and said Smith shall have the exclusive right to manufacture incubators under said patents with a total capacity of twenty-five thousand (25,000) eggs and over; and that in the zone between sixteen thousand five hundred (16,500) egg capacity and twenty-five thousand (25,000) egg capacity, neither of the parties hereto shall make, use or sell, or permit to be made, used or sold, incubators under said patents." (Vol. II, R. 720.)

It will be noted that the Buckeye Company undertook the sole responsibility for future supplying the field with incubators up to 16,500 egg capacity when it was agreed it would not "permit to be made, used or sold by others any incubators under said patents of a total capacity between sixteen thousand five hundred (16,500) eggs and twenty-five thousand (25,000) eggs."

This contract provided for suing infringers as follows:

"Said Smith shall have the right to and shall prosecute all infringers, shall pay all the expense of such prosecution and shall receive all recoveries therefrom, except as to pending suits in which the Company shall have incurred expense, in which cases the expense shall be reimbursed to the Company from any recoveries from said suits. In the event said Smith shall not, upon request of the Company, prosecute infringers, the Company shall have the right to prosecute them, and to join the said Smith as the owner of said patents in such prosecution and in such event the Company shall be entitled to all recoveries and shall pay all expense." (Vol. II, R. 720-721.)

Respondent is not a party to this contract and can neither rely upon it or be bound by it. It cannot change the law that the legal title and the right to sue cannot be separated.

There is nothing in this record to show that the Company asked Smith to prosecute James and Elmira. This contract recognizes the legal necessity of joint action where it says "the Company shall have the right to prosecute them and to join the said Smith as the owner of said patents." The first part of this provision, if construed that Smith could bring suit alone for infringement not within his capacity of 25,000 eggs and above, would be illegal because it would separate the title to the patent and the right to sue. *Crown v. Nye,* 261 U. S. 24; *Independent v. Radio,* 269 U. S. 459; *Peters v. Bates,* 295 U. S. 392.

In the instant case, the invasion of the monopoly, if any, has been within the exclusive territory of The Buckeye Incubator Company, as respondent's apparatus is of 5,000 egg capacity and The Buckeye Incubator Company has the exclusive right to make, use and sell under the Smith patent up to 16,500 egg capacity.

If Smith should prevail in this cause, The Buckeye Incubator Company is not bound, as it is not a party to this

suit and James was not a party to the contract with Smith and Buckeye. Buckeye still could seek its recovery for any injury to it within its special field where it both owns the patent and is manufacturing. Therefore, Buckeye's interests cannot be disposed of in this suit without it being present because it is a necessary and indispensable party.

The District Court held that The Buckeye Incubator Company did not have an undivided interest and, therefore, was not a necessary party. This was error. We know of no way to give Buckeye an undivided interest in this patent other than was followed in this document of assignment (Exhibit 33), by which it got "the full and exclusive right, liberty and license to make, use and sell in and throughout the United States" etc. The document (Exhibit 34) gave it also the exclusive right for all purposes up to 16,500 egg capacity and Smith agreed "not to make, use or sell • • • any incubators of a total capacity up to twenty-five thousand (25,000) eggs." This is an assignment of an undivided part of this patent to Buckeye.

An additional fact is of interest. In the *Waxham* suit before this Court, Smith and Buckeye were joint plaintiffs. There is no proof of any change of title since the initiation of that suit. In the *Snow* suit, Smith alone was the plaintiff.

This so-called exclusive license by Smith to Buckeye was an assignment of the entire right, title and interest to make, use and sell of an undivided part of the Smith patent. This Court has so held in *Waterman v. MacKenzie*, 138 U. S. 252, 255:

> "• • • The patentee or his assigns may, by instrument in writing, assign, grant and convey, either, 1st, the whole patent, comprising the exclusive right to make, use and vend the invention throughout the United States; or, **2d, an undivided part or share of that exclusive right**; or, 3d, the exclusive right under the patent within and throughout a specified part of the United States. Rev. Stat. Sec. 4898. **A transfer of either of these three kinds of interests is an assign-**

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CHARLES ELMORE CROPLEY
CLERK

In the Supreme Court of the United States

OCTOBER TERM, 1936.

No. 36.

SAMUEL B. SMITH,
Petitioner,

vs.

JAMES MANUFACTURING COMPANY and
ELMIRA HATCHERIES, INC.,
Respondents.

RESPONDENTS' BRIEF ON REARGUMENT.

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THE GATES LEGAL PUBLISHING CO., CLEVELAND, OHIO

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In the Supreme Court of the United States

OCTOBER TERM, 1936.

No. 36.

SAMUEL B. SMITH,
Petitioner,

vs.

JAMES MANUFACTURING COMPANY and
ELMIRA HATCHERIES, INC.,
Respondents.

RESPONDENTS' BRIEF ON REARGUMENT.

The Reasons for this Brief.

Respondents take this opportunity to correct errors in petitioner's reply brief and argument. We also confirm and amplify through this additional opportunity answers to the Court's questions to counsel at the previous hearing. We likewise suggest the question of title that was raised in the Courts below. The decisions of the Court of Appeals in these cases are reported in 83 F. (2d) 217 and 221.

We propose to demonstrate and prove from petitioner's own witnesses and own exhibit the nature of the Hastings prior use, its method of operation and its construction. (Vol. II, R. 766-94, Ex. B.) We propose to show the identity between such proof of petitioner and the drawings of respondents of the Hastings prior use so that petitioner can have no complaint about the nature and quality of the proof as to the Hastings prior use. (Res. Exs. 22

and 22a.) We take it the petitioner cannot impeach his own witnesses and his own exhibit showing the Hastings prior use, which, alone, is ample to show complete anticipation.

POINT I.

PETITIONER'S DIVERSE POSITION AS TO THE SCOPE OF ITS PATENT.

Petitioner's reply brief and argument before this Court emphasize that he claims in effect two different patents at different times:

(1) a narrower patent than this Court construed the Smith patent when petitioner is considering the Hastings prior use.

(2) a broader patent than this Court construed the Smith patent when petitioner is considering the James infringement.

We emphasize the fact that on infringement petitioner finds it necessary to go beyond even the broad construction of the Smith patent accorded to him in the *Snow* case, and to ask this Court to find that his patent covers a method of incubation where less than all eggs of all stages are in a cabinet and where the air does not travel in a defined circuit. Indeed, in petitioner's own brief at one place he confines his patent to a single cabinet in which all eggs of all ages must be in the cabinet and in a single compartment at that, in his effort to avoid the Hastings prior use, (p. 15, Main Brief) while in another part of the brief the broadest interpretation is resorted to when infringement is to be discussed. (p. 23, Reply Brief.)

Petitioner **in the trade** vigorously distinguished his patented method from *separate hatching*, such as practiced by the respondent. He circularized the trade with screaming broadsides that separate hatching was markedly different from the Smith process and condemned separate

The Answer to the separate Hatcher question is →

N

All sorts of rumors have been floating around the hatchery industry concerning our attitude toward a separate hatcher. Some have stated that we proposed bringing on the market such a machine. We have no intention whatever of bringing a separate hatcher on the market. We have definite reasons supported by scientific research for taking this stand. We are thoroughly convinced that the hatcheryman is better off from any standpoint without a separate hatcher. The majority of hatcherymen see no sound reason for a separate hatcher. They have not asked for it, and do not want it.

1. Our Research Department says "NO"

When the separate hatcher was first announced, and desiring to maintain our place of leadership in all phases of hatchery practice, we immediately proceeded to investigate its merits and the attitude of hatcherymen toward it. We tried out various types of hatchers. We built in our own plant, the best separate hatchers ever made. We tested them thoroughly. We studied them from the standpoint of quality of chicks produced—percentage of hatch—from the standpoint of production costs and from every standpoint of hatchery operation. In every case we found every type of separate hatcher a hindrance instead of a help. Our Research Department today is unalterably opposed to a separate hatcher of any type so far conceived by man.

2. Our Field Men say "NO"

In order to make a double check on the separate hatcher question we sent our field men to call on users of separate hatchers and others in the hatchery field. We found an overwhelming sentiment against the separate hatcher. It adds to the cost of producing chicks and lays greater financial burden on the hatcheryman who is already heavily laden with items of expense. We have yet to find a single hatcheryman who can demonstrate that chicks produced in a separate hatcher are any better than, if as good as, those produced in a Smith machine.

3. Our Sales Department says "NO"

The Smith Incubator Company has consistently introduced improvements in both mechanical equipment and methods of operation. Each change, however, has been made after most careful scientific testing and nothing has been offered the industry until it has stood most rigorous trials. Our Sales Department is not in favor of bringing something on the market simply to have another item to sell. Our equipment must be of benefit to the purchaser for we realize, that unless a purchaser makes money with the equipment, the sale will prove to be a boomerang in the long run. For that reason, our Sales Department has said that they do not want to offer a separate hatcher. They do not believe it has any place in the economical production of baby chicks.

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NO!

The Separate Hatcher Has No Place in the Hatchery Industry

Our tests have conclusively shown that a separate hatcher adds to the labor cost because the chicks and eggs must be handled more frequently. Separate hatchers add to the chances for exposing the chicks to damaging temperature and humidity changes. We have not found any separate hatcher which will add to the quality of chick produced---nor will it produce any greater per cent of hatch.

We believe a Smith machine produces a better chick than can be produced with any other type of equipment, and produces it at a lower cost per chick.

hatching roundly as something different and completely apart from his patent. (Pet. Exs. 16 and 38, Broadside Advertising.) In one of these circulars he said to the public:

> "We have no intention whatever of bringing a separate hatcher on the market."

By contrast *in this Court* petitioner claims that separate hatching is fully within the purview of his patent and is just a minor variation of his main idea.

POINT II.

NO COURT HAS CONSTRUED THE SMITH PATENT AS BROADLY AS THIS COURT CONSTRUED IT.

At the hearing one of the Justices of this Court asked a question, which, we believe, was to this general effect:

> In what suit was the Smith patent first interpreted as broadly as it was interpreted by this Court?

Counsel for petitioner who closed petitioner's case replied that in the Third Circuit the patent was construed as broadly as it was by this Court in the *Snow* and *Waxham* cases. This is not correct; the correct answer is: "No court ever construed this patent as broadly as this Court." Let us look at the record on this point.*

In the *Cooley* case invention was attributed to Smith for directing the air through a central corridor between partitions to the floor, where it mushroomed and spread beneath the tiers of eggs, ascended through the egg trays and escaped through definitely arranged air outlets.

The Court said in distinguishing Smith from Hastings:

> "Hastings and Smith, the patentee, no doubt saw the same incubating problems, but Smith pursued a

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* We should add that petitioner in an effort to prove infringement asks this Court to still further expand the Smith patent.

solution directly opposite that of Hastings. He, too, set eggs in trays arranged in tiers and enclosed them in a chamber and he also provided artificially heated air by a motor driven fan positioned at the top of the chamber, *but he established an air current and regulated its direction by arranging the tiers of trays in two columns parallel with and separated from each other so as to form between them a central corridor and placed partitions or curtains from the top to a short distance from the bottom of the tiers and directed the air current downwardly not through the eggs but through the corridor where it mushroomed on the floor, spread beneath the tiers, ascended through the egg trays and escaped through definitely arranged air outlets. By so controlling the current of heated air Smith claims, and we think correctly, that he is enabled to attain uniformity of temperature in its movement, first, through the old heat radiating eggs, and next, as it ascends, to the newer heat absorbing eggs, it being necessary that the temperature of the former should be maintained at a point not higher than 105° and that of the latter at a point not below 100°.''* (*Buckeye v. Cooley*, 17 F. (2d) 453, 455, C. C. A. 3.)

This limitation of the patent to partitions to direct the current was rejected by this Court when it said:

"But neither the arrangement nor the means of guiding the current of air are requisite to the application of the principle which Smith discovered and claimed." (*Smith v. Snow*, 294 U. S. 1, 11; p. 8, Opinion in Petitioner's Ex. 2.)

"The specifications and claim both contemplate a continuous circulation of the current of heated air through the chamber, which, regardless of its direction, would continuously operate, by repeated contacts with the eggs in all stages, to equalize the temperature throughout the chamber by carrying heat units from the warmer to the cooler eggs." (*Smith v. Snow*, pp. 8, 9, Opinion in Petitioner's Ex. 2, 294 U. S. 12.)

This proves that the broader interpretation was by this Court, contrary to petitioner's answer to the Court.

In *Buckeye v. Wolf,* 291 F. 253, decided by Judge Westenhaver, no oral testimony was produced as to the Hastings prior uses. (p. 257.) In speaking of the Hastings description in "Poultry Culture" not having the feature of Smith to which Judge Westenhaver limited Smith, he said:

> "Something is said about driving the air from top to bottom by a centrifugal fan, but *the position and location of the fan with respect to the eggs and the direction of the drafts are not defined,* much less is any provision disclosed for driving the air currents in a defined channel or for removing the foul air and supplying fresh air." (p. 258.)

As to the Hastings application, Judge Westenhaver said:

> "No well-defined channels for the circulation of the air are provided." (p. 259.)

In describing Smith's method, Judge Westenhaver said:

> "The principle of operation and the hatching method for which this apparatus is designed consist in forcing mechanically a draft of heated air downwardly through the central corridor, where it passes below the bottom of the partition or curtains and ascends through the column of egg trays to the exit at the top of the respective egg chambers * * *. A specified number of the trays of eggs is placed in the stationary egg racks at the top of the egg chambers, and after a predetermined time are removed and placed in the tilting egg rack * * *. The trays are again, after a predetermined time, transferred to the next lower tier, and the operation thus repeated until the eggs have reached the bottom of the tilting rack and are then ready to hatch. They are then transferred to the stationary hatching trays at the bottom of the incubator. It is

solution directly opposite that of Hastings. He, too, set eggs in trays arranged in tiers and enclosed them in a chamber and he also provided artificially heated air by a motor driven fan positioned at the top of the chamber, *but he established an air current and regulated its direction by arranging the tiers of trays in two columns parallel with and separated from each other so as to form between them a central corridor and placed partitions or curtains from the top to a short distance from the bottom of the tiers and directed the air current downwardly not through the eggs but through the corridor where it mushroomed on the floor, spread beneath the tiers, ascended through the egg trays and escaped through definitely arranged air outlets. By so controlling the current of heated air Smith claims, and we think correctly, that he is enabled to attain uniformity of temperature in its movement, first, through the old heat radiating eggs, and next, as it ascends, to the newer heat absorbing eggs, it being necessary that the temperature of the former should be maintained at a point not higher than 105° and that of the latter at a point not below 100°.*" (*Buckeye v. Cooley*, 17 F. (2d) 453, 455, C. C. A. 3.)

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> also claimed that the forced draft circulation of air carries off the heat and foul air from the eggs in the advanced stage of incubation at the bottom of the egg rack, reducing their temperature and delivering the heat to the eggs in the less advanced stages, thereby aiding the incubating process and obtaining a uniform temperature in the egg chamber." (pp. 255-6.)

Later Judge Westenhaver in the *Blum* case found, as did Judge Hickenlooper in the *Petersime* case, that an open box without partitions did not infringe. Both were affirmed by the 6th C. C. A. This shows that Judge Westenhaver in rejecting Hastings did so because he did not show the specific details of the Smith patent to which Judge Westenhaver confined Smith, contra to the holding of this Court in the *Snow* case.

In *Buckeye v. Hillpot*, 22 F. (2d) 855, 857, Judge Bodine limited the patent to passing air through the older eggs first. He said:

> "The Circuit Court of Appeals, in 17 F. (2d) 453, held that the patent disclosed air currents passing first through the eggs in advanced stages of incubation to those in less advanced stages of incubation. This Hillpot does not do."

Judge Bodine held there was no infringement for this reason and was affirmed by the 3rd C. C. A. On appeal in the *Hillpot* case, 24 F. (2d) 341, the Third Circuit Court of Appeals limited the Smith invention to one in which there is:

> "a 'corridor' between tray tiers, and a corridor of a kind defined by its purpose." (p. 344.)
>
> "With such an arrangement the air, confined in a corridor partitioned from the tray tiers by curtains, will move in a current or column to the point of outlet which usually is at the bottom of the corridor, when, after mushrooming, it will pass below the tiers and ascend through the egg trays in a current or column

because it is confined there by the same curtains that first prevented its escape from the corridor. The essence of the invention therefore is forced circulation of heated air in predetermined direction, or stated differently, forced circulation of columns of heated air through columns of eggs." (p. 344.)

The Courts which thus construed Hastings (*Wolf*, *Cooley* and *Hillpot* cases) had no need to give Smith a broad interpretation to make out infringement because they found that the proof of Hastings was not sufficient to meet the details of the Smith patent: when there was a departure from the Smith construction by omitting particulars, as in the *Hillpot* case, the Court of Appeals for the Third Circuit found no infringement.

In the *Wolf* case the infringement was literal; there was no necessity to give a broad interpretation to the patent.

Judge Westenhaver said:

"No question of invention or infringement turns on a close construction of all or any of the claims." (p. 256.)

"In the matter of infringement, no difficulty is presented. Infringement is not only plainly shown, but the defendant's conduct, it seems to me, is and has been inexcusable." (p. 264.)

"His [defendant Wolf] usual method of operation is that of the patent, although he asserts that he has experimentally hatched eggs by shifting the trays about indiscriminately instead of successively from upper to lower levels." (pp. 264-5.)

Cooley Case.

In the *Cooley* case, Judge Bodine said there was no question of infringement or patent interpretation:

"The defendant, Cooley, knew about the litigation in Ohio. He procured, after that suit, a Buckeye in-

cubator (no. 7), called in local carpenters and mechanics and built similar units. These units were all operated during the seasons of 1923 to 1925 inclusive. Infringement seems clear." (Petitioner's Ex. 2, *Buckeye v. Cooley*, p. 4, Opinion.) [Note Buckeye has the exclusive right to make, use and sell Smith incubators up to 16,500 egg capacity—Petitioner's Exhibits 33, 34, Vol. II, Rec. 716-23.]

The Third Circuit Court of Appeals said in affirming Judge Bodine:

> "It will avail nothing to repeat the testimony on the issue of infringement. It will be enough to say that on that issue we find against the defendant." *Buckeye v. Cooley*, 17 F. (2d) 453, 455, p. 4, Opinion in Petitioner's Ex. 2.

Hillpot Case.

By contrast, when Judge Bodine had occasion to construe the scope of the Smith patent to see if it went beyond the mere details of its drawings, he found non-infringement because of the absence of partitions in the Hillpot machine. It was then that he said:

> "Rolla Lawry probably completely anticipated Smith, but his anticipation need not now be considered. In the last analysis, Smith describes his method of hatching to be by maintaining a temperature throughout of 100° and 105° F. No successful operation is possible at such temperatures. His catalogues and the evidence show that the temperature must never exceed 99° F. So the patent does not disclose a successful method of operation." (p. 3, Opinion in Petitioner's Ex. 2, 22 F. (2d) 855, 857.)

Petitioner in his main brief says the Lawry and Hastings prior uses are in the same class. (pp. 20-21.)

In the same case of *Buckeye v. Hillpot* the Third Circuit Court of Appeals approved Judge Bodine finding non-infringement, saying:

"*In the Cooley case infringement was so plain there was no occasion to construe the claims.* In the present case, however, the alleged infringements are of a character that call for their construction. Hence the scope of the claims and how they read, as construed, on the practices of the respondent are the only issues with which we have to deal under the Smith patent." (p. 2, Opinion in Petitioner's Ex. 2, 24 F. (2d) 341, 342.)

• • • • •

"But the issue of infringement in this case does not turn in law on such an interpretation of the claims alone, or in fact on what, as thus far stated, seems a mere reversal of the steps of the patented methods. It turns on another fact, until now purposely omitted, and on its consequent air movement. Looking for the invention by reading the claims in the light of the specification and the file wrapper history of the patent prosecution, one fixed and definite thing is disclosed, first with reference to its presence in the apparatus and next with reference to its use in the methods. That is a 'corridor' between tray tiers, and a corridor of a kind defined by its purpose." (pp. 4-5, Opinion in Petitioner's Ex. 2, 24 F. (2d) 341, 344.)

"The essence of the invention therefore is forced circulation of heated air in predetermined direction, or, stated differently, forced circulation of columns of heated air through columns of eggs. • • •" (p. 5, Opinion in Petitioner's Ex. 2, 24 F. (2d) 341, 344.)

"Turning to the specifications for light upon the claims, we find nothing there suggested in respect to air movement except by currents in predetermined directions. With all this before him what did Hillpot do? He simply omitted curtains. He thus transformed the corridor of Smith into the passageway of the old art. Will this passageway without curtains sustain and direct the air current as it comes from the fan? Hillpot says it will not, and, what is important, Smith does not say it will. With the Smith central idea of means and function for maintaining and directing an air current out of the Hillpot structures, Smith main-

tains that the true meaning of the 'current of heated air' as employed in the patent claims is merely a current 'created • • • with sufficient velocity to *circulate, diffuse and maintain* the air throughout the chamber' and urges that with the curtains off, the air in Hillpot is so diffused, generally and laterally, that it strikes each of the eggs again and again, and, in doing so, it picks up some of the heat units from the warm eggs and carries them to the cool eggs, thereby effecting the desired uniformity of temperature. (It may be observed that it also carries them to other warm eggs.) In a word, he says that air 'agitation' is the essence of his invention, yet nowhere in the file wrapper, specification or claims of the patent do we find any reference to air agitation. This silence, we surmise, is due to the fact that air agitation in the sense of indefinite circulation, diffusion, or churning was prior art. On circulation by defined currents alone Smith was awarded the patent. We cannot find circulation of that kind in any of the Hillpot structures. With curtains off, the tiers of trays present comb fronts to the passageway. When the warm air leaves the fan there is for a moment and for a short distance a current, but as the force weakens the current fades, and the body of heated air does not go to the opposite wall and mushroom but wanders in between each of the scores of trays and goes where it pleases. Instead of one strong current moving in one direction in trunk form, Hillpot has a trunk current only on leaving the fan; then it divides into a multitude of branches which follow no defined courses but only courses made by the least resistance. We are constrained to find that Hillpot did not infringe the claims of the Smith patent in suit." (pp. 5-6, Opinion in Petitioner's Ex. 2, 24 F. (2d) 341, 344-5.)

POINT III.

REASON WHY EARLIER DECISIONS DISTINGUISHED SMITH PATENT FROM HASTINGS: THE EARLIER DECISIONS LIMITED CONSTRUCTION OF THE SMITH PATENT TO DETAILS.

The answer to this proposition is as follows:

(a) Because the patent was construed narrowly by previous Courts due to the fact that infringement in each case was literal and there was no need to do otherwise. Therefore, the Courts found that the incomplete proof of Hastings was insufficient to prove anticipation of the *details* of the Smith patent *when it was so limited to those details*; for instance the Courts in these earlier cases found that Smith was limited to arranging the eggs in a column in a predetermined order with the eggs growing hotter

Since this Brief was printed we have been advised of the decision of the Supreme Court in Canada in the case of *His Majesty the King, on the information of the Attorney General of Canada v. The Smith Incubator Company and The Buckeye Incubator Company*, dealing with the validity of the Smith Canadian patent, which is a substantial duplicate of the Smith American patent now at bar here. We are submitting with this Brief a certified copy of that opinion as the five Justices of that Court concurred in holding the Smith patent invalid in view of the Hastings prior use. The Canadian Supreme Court adopted the interpretation of the Smith patent which this Court has given to it. It has concurred with the opinion of the Court of Appeals for the Second Circuit as to the Hastings prior use anticipating the Smith patent.

Bodine and the Third Circuit Court of Appeals in the *Cooley* case. This Court found that Smith could set his eggs of different ages in any way in any order. It found that the direction of the defined current or the location of the fan for driving this defined current was immaterial and that the Smith patent covered either the air going up or down or horizontally so long as there was a defined current, contrary to the Courts of Appeals of the Sixth and Eighth Circuits and the Third Circuit in the *Cooley* case. This Court found that partitions or curtains were unnecessary and that a corridor between the tray stacks was not an essential element, contra to the foregoing Circuits. In short, this Court found that the Smith patent covered broadly a box without partitions in which eggs of all stages of incubation were treated with a defined air current passing over the hot eggs and thence to the cool eggs in a circuit over and over again so as to transmit the heat of the hot eggs to the cool eggs no matter how the eggs were arranged and irrespective of the direction of the current.

This Court said:

> "The drawings and specifications show the eggs arranged in tiers on either side of the chamber, with an open space or corridor between, at the top of which a revolving fan forces the air downward in the open space of the corridor. * * * The specifications and claim both contemplate a continuous circulation of the current of heated air through the chamber, which, regardless of its direction, would continuously operate, by repeated contacts with the eggs in all stages, to equalize the temperature throughout the chamber by carrying heat units from the warmer to the cooler eggs." (pp. 6-8, *Smith v. Snow,* Opinion in Petitioner's Ex. 2, 294 U. S. 10-12.)

When Smith is thus construed, as by this Court, the Hastings prior use as now proved is completely anticipatory. We believe it anticipatory even of the details which

were not fully proved in the Hastings use in previous cases, but that is a moot question now because this patent has been construed by this Court. The only theoretical difference that Smith in his reply brief now advances to distinguish Hastings from Smith is this immaterial claim: that Hastings sometimes set his eggs in several columns of different ages and that as the eggs grew older and hotter, he moved them from one column to the next column sidewise instead of vertically, as in Smith, and that the temperature in the horizontal columns was different. Under the interpretation of this patent by this Court, even if this were true, which we deny, it would make no difference. **The common fan in the Hastings machine blew the air downwardly through each column and thence out of the bottom of each column where the independent streams were reconsolidated and mixed again in the fan for redelivery so that the heat of the hotter eggs would be conveyed back to the cooler eggs.**

As this Court has said, it makes no difference in what order the eggs are placed or in what arrangement or position, so long as the eggs of all stages of incubation and heat are subjected to the forced draft that is continuously passed over them in a defined course. Smith's patent teaches a variation in temperature of five degrees. In practice he has a greater variation. Smith claims that Hastings had a variation in temperature between the columns of eggs as high as ten degrees. As the Smith patent is not limited in its claims to any particular degree in temperature, we would say this quibbling over the Hastings temperature is immaterial. In Smith's application as originally filed he called for a variation of eight degrees, namely, from 98° to 106°. (Vol. II, Rec. 799.)

Smith's claim that Hastings is not an anticipation is refuted by Smith's position as to the James infringement. If this Court will merely reverse the situation and assume

that Hastings was an infringer and James the anticipation, it will see exactly what we mean. Smith says Hastings is not an anticipation because, while eggs of all stages are in the same compartment and are in the path of the same air stream in a single box with that same air stream passing over all eggs repeatedly yet James is an infringer because eggs which are not in all stages are in a box in which the air cannot reach the hottest eggs in the latter stages that are in a separate hatcher.

We fail to see how James can be an infringer when less than all stages of eggs are in the cabinet if it is so material on anticipation that eggs of all stages in the same cabinet are arranged in columns according to age, even though the eggs are engaged by the same air stream to convey the heat from the hottest eggs to the coldest. Smith's position is fatally inconsistent. Either Hastings is anticipation or James does not infringe, if Smith's theory of his patent is consistent. We direct your attention to page 15 of Smith's main brief where he disclaims in effect the James infringement by saying that Smith only covers the stages of *all* eggs in a single box; as James does not have the eggs of the last three days this definition would exclude the James machine from infringement.

POINT IV.

PETITIONER'S INCONSISTENCY OF POSITION ON INFRINGEMENT AND ANTICIPATION.

Petitioner's reply brief emphasizes the inconsistency which exists between the claim of infringement by a separate hatching machine in which all eggs are not located in a single cabinet and the claim of no anticipation by a machine where eggs of all stages are in the same cabinet. This Court need go no further on infringement than to go back to page 15 of petitioner's main brief and observe the new interpretation of the Smith patent, put upon it by peti-

tioner in an effort to avoid the Hastings prior use which clearly eliminates infringement by the separate hatcher machine.

Let us first compare these statements as to the nature of the Smith invention with the position of the petitioner before this Court in the *Snow* case, as found by this Court in its opinion. Petitioner says now in its main brief:

> "The eggs must be set *in staged incubation* • which is defined as a successive setting of eggs within the cabinet at brief intervals." (p. 15.)

This Court has found this to be old. *Smith v. Snow*, 294 U. S. 16, 17.

Again petitioner says:

> "The eggs in staged incubation *must be set in one room* • in order for the heat interchange to function," etc. (p. 15.)

But in separate hatching the eggs are not all set in one room, but in two rooms, so that the heat interchange of the hotter eggs during the last three days, during which they supply 180 per cent of the total heat supplied by the eggs prior to the last three days, cannot function to warm the cooler eggs in the incubator.

Again petitioner says:

> "The air must be circulated *about all of the eggs* • in this single room," etc. (p. 15.)

Note the emphasis *"about all of the eggs"* in the single room. In the separate hatcher only a *part* of the eggs is in the incubator and the eggs are not all in the single room but in two separate rooms.

Again petitioner's brief says:

> "The current of air must move with a *sufficiently high velocity* to maintain the air at the *same tempera-*

• Emphasis is that of petitioner.

> *ture about all* of the eggs, thus breaking down any tendency for the formation of hot or cold spots about any group of eggs, • • • Smith mounted his fans directly within the chamber and vigorously recirculated substantially the same body of air over and over again through the eggs so that the temperature of the air was the same at all points, and all of the eggs, whether new or old, were subjected to the same air temperature." (p. 16.)

In the separate hatcher the eggs in the hatcher are of a different temperature from those in the incubator by as much as 3½ degrees. (Vol. I, R. 255.)

Let us turn to this Court's interpretation of the Smith patent in the *Snow* case. This Court said:

> "It was possible to carry on the process of incubation continuously by placing fresh eggs in the incubator at intervals, *as those of the most advanced stage hatched and the new-born chicks were removed.* It was possible to apply heated air to the eggs at a constant temperature, thus avoiding the necessity of varying by nice adjustments the temperature of the applied air, so as to conform to the varying temperatures of the eggs *as they passed through successive stages of incubation.*" (p. 4, Opinion in Petitioner's Ex. 2, 294 U. S. 6, 7.)

This Court referred to the most advanced eggs as those during the last three days, in the same sense that the patent claims refer to the eggs as the more advanced. It said:

> "They [drawings and specifications] indicate also that as the eggs most advanced are hatched, they are to be replaced by moving downward the trays containing the several successive settings of eggs which are in earlier stages of incubation. • • • So much of the air as was introduced through the intake would thus reach the more advanced eggs first. • • •
>
> "Here the specifications showed an arrangement of the eggs and a means of guiding the current of air so

> that it would reach the most advanced eggs first. But neither the arrangement nor the means of guiding the current of air are requisite to the application of the principle which Smith discovered and claimed. • • • The specifications and claim both contemplate a continous circulation of the current of heated air through the chamber, which, regardless of its direction, would continuously operate, by repeated contacts with the eggs in all stages, to equalize the temperature throughout the chamber by carrying heat units from the warmer to the cooler eggs." (pp. 7-9, Opinion in Petitioner's Ex. 2, 294 U. S. 10-12.)

As pointed out by this Court in its reference to the hotter eggs, these eggs are the ones most advanced in incubation, namely, the eggs during the last three days, which are the hatching eggs in the lower stationary trays of the Smith patent. The principle thus found by this Court in the Smith invention was the combination of the eggs of *all* stages with a stream of air being continuously moved over all of the eggs in a single room.

The Court said in *Smith v. Snow, supra:*

> "It is enough that there is a movement of air in current form following substantially defined paths through the tiers of egg trays, sufficient to effect the desired transfer of heat units." (p. 14, Opinion, Petitioner's Ex. 2, 294 U. S. 20.)

Heretofore, in this Court and below, the petitioner has said eggs can be placed of any age anywhere in any order. The Court so found.

But *now* petitioner says:

> "In order to secure the benefits of the invention, intelligent use must be made of staged incubation so as to secure an approximate balance between the endothermic and exothermic eggs." (p. 15, Main Brief.)

This *new* limitation was an effort to avoid the Hastings prior use. Before discussing this, let us again point

out that the James machine does not have all the eggs in the same cabinet. The eggs in the more advanced stage, or as this Court said, in the most advanced stage, that is the last three days, are in a separate hatcher where there is no churning of the air and no air movement created artificially. There is no chance for the heat of those last three days reaching the earlier eggs. The incubator and hatcher are entirely separate machines, having separate characteristics, with different temperatures and different moisture conditions. The air is not circulated about all of the eggs at all stages of incubation. The temperature of the different groups of eggs in James, that is those that are incubating and those that are hatching, is different. In the incubator the temperature is 100½ degrees; in the hatcher it is 102 to 104 degrees. Humidity, which is a factor of the temperature, is also different, being 82-85 degrees in the incubator and unlimited moisture in the hatcher.

Now why did Smith virtually disclaim infringement by James in this Court on page 15 of his main brief? It was because of his effort to avoid the Hastings prior use by trying to claim that the Hastings prior use consisted of a number of separate compartments in each of which the eggs were of different ages and different temperatures. By attempting to limit the Smith patent to a single compartment with uniform temperature, Smith hoped to avoid anticipation by Hastings on the theory that Hastings had multiple compartments. Unfortunately for Smith this was not the whole story as to Hastings. The separate compartments of Hastings, even if the eggs were so heated, were **all in air communication with a common air stream being supplied to all compartments and returned from all compartments with a common fan, so that the heat of all eggs in a single cabinet was conveyed to the cooler eggs in the same cabinet as these independent compartments were housed in a single cabinet or box.** This Court said that it

makes no difference as to the order of the eggs as long as the heated air is recirculated among the eggs. (*Smith v. Snow*, 294 U. S. 12.)

Thus the fallacy of these attempted limitations of the Smith patent to avoid the Hastings prior use is apparent. Of course, in urging these limitations that certainly exist in this Smith patent, there can be no infringement by the James incubator and separate hatcher. It was not until this case came back to this Court, based upon the Court of Appeals of the Second Circuit sustaining the Hastings prior use, that Smith has taken the position in this case that his patent is so limited. Heretofore in this case his position has always been that his patent was broadly for mechanically stirring air over eggs of different ages, that is, if an egg were cold on the ninth day and there was another egg that was warm because it was ten days old, and you stirred the air over those two eggs, you would have the Smith invention. It was only on that theory that infringement by James could be made out.

POINT V.

ERROR BY PETITIONER AS TO WHEN RESPONDENTS STARTED SEPARATE HATCHING.

In the opening argument for petitioner a very grave misstatement was made by counsel to the effect, as we recall the statement, that respondent started separate hatching but recently and only for the purpose of giving a colorful argument to non-infringement, after this Court had sustained the Smith patent for the purpose of trying to avoid this Court's decision. **The record refutes this statement.*** Here are the facts, which are especially important

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* When we so replied at the argument and called this Court's attention to this error there was no denial that this was a misstatement.

as showing the fundamental reason why Respondent's method is basically different from that of the Smith patent:

In 1921 Respondent started its poultry division by securing the services of Professor Dann of Cornell University to investigate incubators. Simultaneously their research engineer, Mr. Shodron, was assigned to the engineering design. In 1923 a sectional machine was put on the market. The growth of bacillary white diarrhea from 1923 to 1925 resulted in recommendation by the American Veterinary Medical Association and the Kansas City State Agricultural College in 1926, that forced draft cabinet machines in which eggs of all ages were incubated and hatched resulted in an increased spread of the disease to other chicks in the same machine. (Vol. I, R. 295, Res. Ex. 66, Vol. II, Rec. 1222-25.)

The American Veterinary Medical Association reported:

> "A large number of inquiries concerning incubators, as a possible means of disseminating bacillary white diarrhea infection of chicks, led us to study this problem. • • •
>
> "The continual circulation of chick-down in the forced-air-draught type of machine, at the time of hatching, suggested a possible means of dissemination. • • •
>
> "We made a qualitative study of the bacteriology of three forced-air-draught type incubators and one sectional type. We then made quantitative studies, and the results of these studies will be published in another paper. We found that after each hatch there was a direct relationship between the time of incubation and the number of organisms (in a machine of the forced-air-draught type). After thoroughly cleaning and disinfecting the incubator, we obtained very few organisms. However, as soon as the chicks began to hatch, the number of organisms greatly increased until the chicks were removed. This was not true of the

sectional type of machine, where the number remained approximately the same throughout the period of incubation, although at the time of hatching the flora changed to the same as that observed in the forced-air-draught type of machines. • • •

"**1. That bacillary white diarrhea was disseminated by artificially infected chick-down, placed in a forced-air-draught type incubator.**" (Vol. II, R. 1222, 1223, 1225.)

In *Respondents' Exhibit 67 On Spread of B. W. D. Infection*, the bulletin of the Agricultural Experiment Station, Kansas State Agricultural College, Manhattan, Kansas, said:

"Bacillary White Diarrhea

"in Fowl

"Summary

"The Incubator as a Source of Infection

"A large number of inquiries concerning incubators as a possible means of spreading bacillary white diarrhea, led the writers to study this problem. The complete report of the experiments on such dissemination has been published (Hinshaw, Upp, and Moore, 1926.) • • •

"In a study of the bacteriology of various types of incubators, *it was found that the bacterial content of the air in the forced-air-draft type of incubator increased very markedly at hatching time.*" (Vol. II, Rec. 1227.)

"There is no doubt but that fecal organisms spread throughout the incubators of the forced-air-draft type; and since it has been proved that the infected droppings are one of the chief sources of infection, *it is logical to assume that S. pullorum can be transmitted throughout the machine by the air current.* This may also be true with other types of machines." (Vol. II, Rec. 1229.)

And again in *Respondents' Exhibit 66*, the (February, 1926) Journal of the American Veterinary Medical Association said:

> "The continual circulation of chick-down in the forced-air-draught type of machine, at the time of hatching, suggested a possible means of dissemination."
>
> "Bacteriology of Incubators
>
> "We made a qualitative study of the bacteriology of three forced-air-draught type incubators and one sectional type." (Vol. II, R. 1222.)
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> "Conclusion
>
> "In conclusion we wish to state:
>
> "1. That bacillary white diarrhea was disseminated by artificially infected chick-down, placed in a forced-air-draught type incubator.
>
> "2. That chicks hatching in the compartment opposite to the one in which infected down was spread did not suffer as high a per cent mortality as chicks hatching in the infected compartment.
>
> "3. That similar results were obtained by infecting the down of hatching chicks and exposing healthy chicks to the down which might be carried from the infected chicks to the non-infected." (Vol. II, R. 1225.)

The foregoing establishes *(a) the communication of the disease B. W. D. in forced draft incubators,* such as Smith's; **(b) establishes by improved practice the hatcher should be a separate apparatus, separately used,** from the incubator, where the infection or communication of such disease is to be avoided; **and (c) that, therefore, a separate hatcher, such as involved in this suit, is of prime importance and economic value.** The cabinet machine referred to was of the Smith type. **This led to Respondent developing the idea of a separate hatcher machine.** In the spring of 1926, Respondent built its first experimental separate incubator, using its sectional machine as the separate hatcher, which it still uses. Experimental work continued

until 1930 when the first commercial machine was marketed. Thirty-five thousand dollars ($35,000) was spent upon this experimental work. The executive of Repondent in charge of this work said:

> "To my personal knowledge our company has never, at any time, had a Smith incubator in our shop or in our development department. To my knowledge our men in the engineering or development or shop use have not operated the Smith incubator during the period of our experimental work. So far as my knowledge is concerned, the Smith machine has had no connection with the development of our machine.
>
> "We were the pioneers in the incubating business in providing a machine for incubation and another machine for hatching, such as I have described. In addition to what I have said, this disease question was mainly the principal motive in having these two separate machines. At the same time, we wanted to produce a quality chick." (Vol. I, Rec. 298.)

Again he said:

> "We still use the hatcher on our sectional machine as an incubator hatcher. In the development of the incubator hatcher, our developing department had in mind the desirability of using the sections of the so-called sectional machines as the hatching section for the incubator hatcher and those sections are still used in that manner." (Vol. I, R. 299.)

This suit was started July 11, 1930. As Respondent's apparatus was completely developed and put on the market some years before 1930, and many years before this Court's decision, the statement of counsel for Petitioner that separate hatching was a recent excuse has no foundation in fact.

James incubator cannot hatch.

The Smith claims 1, 2 and 3 are devoted to a method of hatching. Smith is claiming that James' incubator is the only infringing machine and disclaims the James separate

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James incubator cannot hatch.

The Smith claims 1, 2 and 3 are devoted to a method of hatching. Smith is claiming that James' incubator is the only infringing machine and disclaims the James separate

hatcher as being within the purview of this litigation. Therefore it is pertinent to inquire whether the result specified by the Smith claims of the Smith patent can be produced by the James incubator. The answer is "No." The incubator does not hatch. The temperature and moisture conditions are not suitable. If you tried to hatch in the James incubator there would not be space enough between the trays for the chicks; and even if there were space enough, the chicks would fall out of the trays into the rapidly revolving stirrers on the bottom of the incubator where they would be killed. The machine is not adapted for hatching and Smith does not claim that it has ever been so used. A machine or a method or both, which do not produce the same result are not infringements.

Goodyear v. Davis, 102 U. S. 222, 230;
Gould v. Rees, 15 Wall. 187, 194;
Royer v. Coupe, 146 U. S. 524, 530, 531;
Westinghouse v. Boyden, 170 U. S. 537, 569.

POINT VI.

ERROR OF PETITIONER AS TO HASTINGS' AIR SPEED BEING DIFFERENT FROM SMITH'S AIR SPEED.

Petitioner's counsel in argument said that Hastings air speed was too slow to be of any moment because it was only thirty feet a minute. He stated that this was so slow that you could hardly walk that slowly.

What Hastings testified to was that the air was changed in his incubator completely every thirty seconds. "In the practical plant the entire volume of air passes through the fan every thirty seconds." (Vol. II, R. 756.) His later statement as to the thirty feet per minute is evidently in error, as he was referring to the thirty second change of all of the air. But even if it was thirty feet per minute, as there is no denial that thousands of chicks were successfully hatched by Hastings, it does not seem to be material

It has been observed that during incubation embryos are injured more frequently in certain periods of development than in others. Many embryos, being naturally weak, die at these particular periods, which might be called *critical* periods.

There are at least two critical periods in the life of the chick embryo. They fall invariably on the fourth and nineteenth days of incubation.

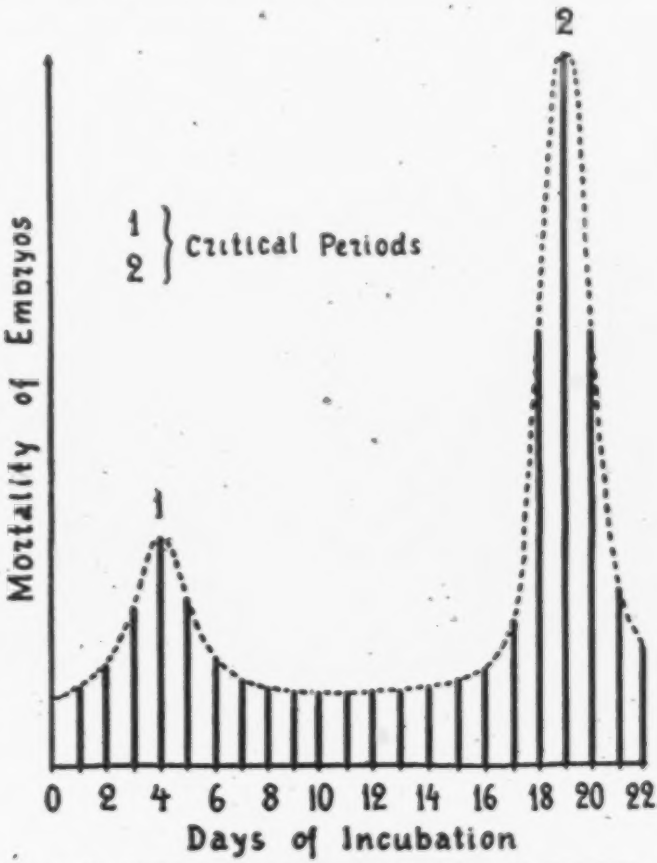


FIGURE 3. DISTRIBUTION OF EMBRYONIC MORTALITY IN ARTIFICIAL INCUBATION

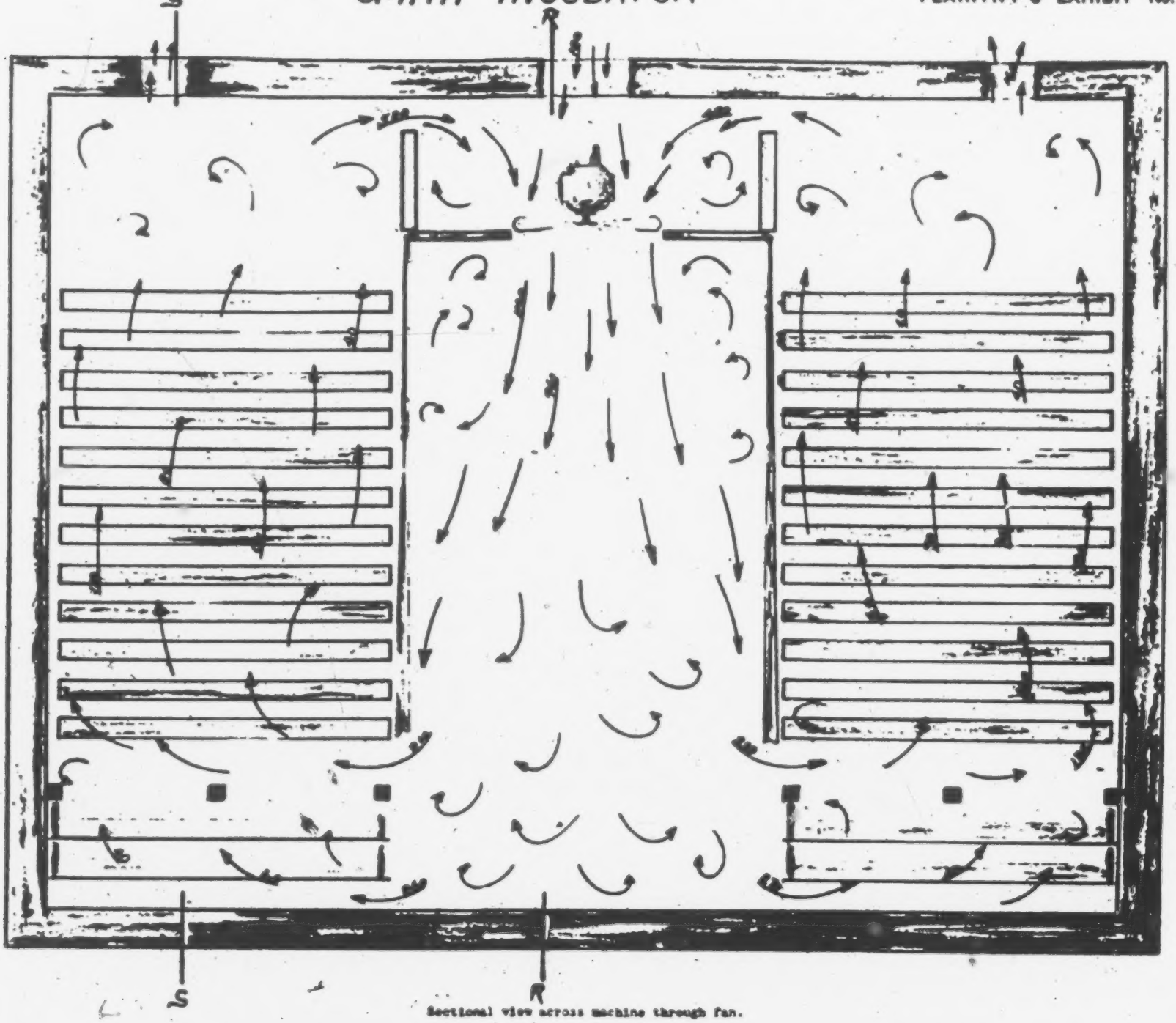
Under ordinary conditions of artificial incubation there are at least two critical periods in embryonic life, shown by heavy mortality at the fourth and the nineteenth day of incubation.

Furthermore, the embryonic mortality is found to be much greater at the second critical period than at the first. Under ordinary conditions of artificial incubation, an average of about 3 embryos per 100 die at the first critical period, about 15 at the second, and about 7 during the rest of the incubation period (figure 3). Under exceptional conditions, the

PETITIONER'S EXHIBIT 11A SHOWING 40 FT. AIR PER MINUTE IN THE SMITH MACHINE.

SMITH INCUBATOR

PLAINTIFF'S EXHIBIT No. 11 A



Sectional view across machine through fan.

Arrows show general direction of air currents. Numbers give approximate speed of currents as recorded by anemometer (Siren).

Readings in lower two trays were taken with anemometers in the trays.

Fans were rotating 1600 to 1650 R. P. M.

Air which passes from corridor under lower two trays goes through the trays to space above. In upper twelve trays a very small per cent of the air which has come from the corridor passes through the tray. The large portion of it goes up the air columns between the trays.

The long arrows sweeping across sides of upper twelve trays show currents between tray columns.

because **the Smith claims are not limited to any particular speed per minute nor does the specification state the limitations of air speed in the Smith machine.** So long as the air travels fast enough to maintain a substantially even temperature, that is sufficient. That, Hastings had, as shown by the results that he got.

Furthermore, in the Smith machine the speed is as low as 40 feet per minute, (Pet. Exs. 11, 11a) and in the James machine, claimed to be an infringement, the speed of air where the eggs are located, in many places, as shown by petitioner's test in Exhibit 24, ranges from 0 to 30 feet per minute. If thirty feet per minute air speed is a ground for lack of anticipation by Hastings, then the presence of thirty feet per minute in the James machine is a ground for non-infringement. The only limitation this Court put upon Smith's air speed was that it should be in a defined circuit and should be forced draft as distinguished from natural draft by hot lamps and the like.

Best of all, let us look at petitioner's own exhibit 11a, based upon petitioner's own *ex parte* tests of its own machine. **Its own air speeds are as low as forty feet a minute. We find the physical embodiment of the Smith incubator, offered by petitioner, tested by petitioner and proved by petitioner, as having speeds practically the same as that of the Hastings machine.**

POINT VII.

SEPARATE HATCHING PUBLICLY DISCLAIMED BY SMITH.

The highest chick mortality occurs about the 17th to 18th day. This is the reason for adjusting the conditions of temperature and moisture exactly during this period with great care, which can only be done by moving the eggs from the incubator to a separate hatcher. This high mortality period is shown in the circular of the petitioner reproduced herewith. (Vol. II, R. 1138, Res. Ex. 38.) In this exhibit Smith says:

"*This is particularly important on the 18th and 19th days of incubation when the greatest death loss in the shell occurs.* At this critical period, the eggs are two to three degrees warmer than the incubator temperature and naturally are cooled by the air which moves around them. They are so sensitive to temperature changes that air gaps or holes in the egg formation in the trays have a definite bearing on the hatchability of otherwise good eggs. **Doesn't this careful, scientific research prove to you that any method of hatching which involves the moving or disturbance of eggs during the critical period means a decrease in hatching percentages? We think you will agree that it does.**" (Vol. II, R. 1135.)

Smith has publicly disclaimed in the trade and to the public separate hatching from coming within his invention.

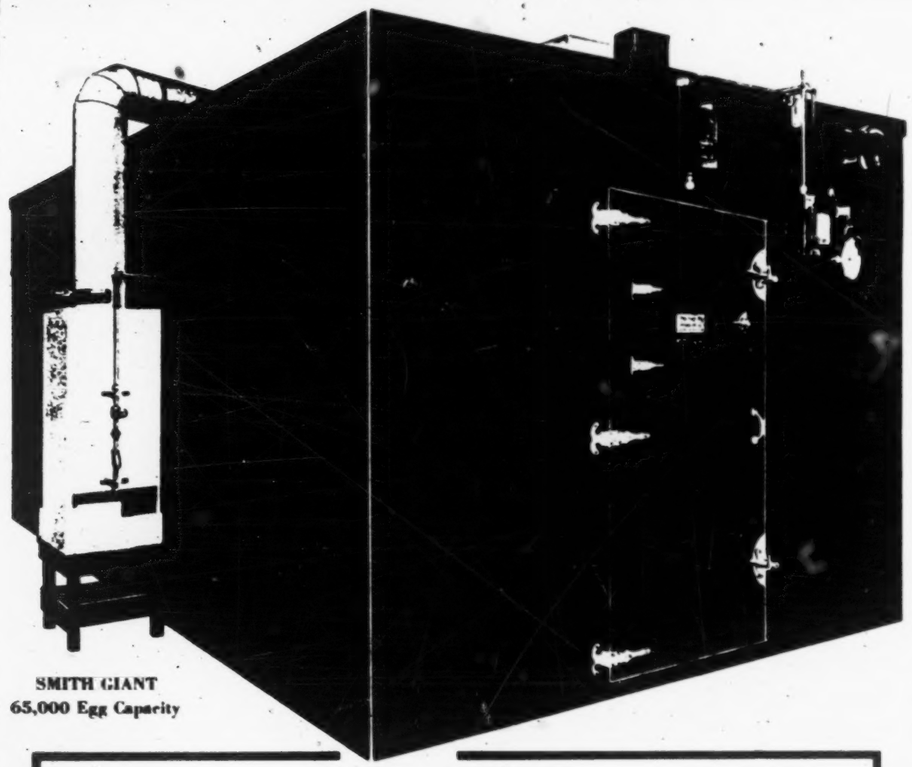
His publications to the trade and recommendations to hatcherymen are directly contrary to his position in this case that separate hatching comes within his patent. In Ex. 38, Smith's broadside circular, he says:

"Smith hatches best. *Because eggs are never disturbed during critical period. 18th day to pipping time.* Another scientific reason why **Smith research has continually advised against separate hatchers** and all other methods where retraying on the 18th day is necessary." (Vol. II, Rec. 1135.)

In explaining why separate hatching does not come within his method, Smith says in this same circular:

"On the eighteenth day of incubation, important changes are taking place in the development of the chick. Up to this time it has lived on the albumen or white of the egg, but now begins to assimilate the yolk. We all know how a change of feed affects chicks when they are in the brooder and can understand how a similar change would affect the chick while it is still in the shell. The heat curve in Figure 4 illustrates how this new food retards the heat development. Figure 3 shows that under normal incubation 60 per cent

Smith Hatches Best . Because Eggs
During Critical Period . . 18th Day



SMITH GIANT
65,000 Egg Capacity

The Smith Incubator—from the smallest to largest—represents equipment which a hatcheryman may have installed by factory experts to *place him in a position whereby he may take full advantage of the suggestions and service of the Smith Organization.* However, the discoveries made by the Smith Research Department are offered freely to the whole hatchery industry. As time goes on, competition will lay its heavy hand on the inefficient hatcheryman. He must get up-to-date as to methods and equipment or pass out of the picture. We offer our services to all who are progressive, anxious to learn and get ahead.

Another Scientific Reason Why Smith Re
Has Continually Advised Against Sep
Hatchers and all other methods where ret
on the 18th day is necessary

You cannot dodge facts. You cannot rely on theory. You cannot follow unproven methods safely. These emphatic statements should be of more than passing interest to hatcherymen who are all—without a single exception—in the very midst of changing conditions which have no parallel in the entire history of the industry.

The facts about better hatching—even if they do uproot old ideas—are given to the industry by Smith Research only after the most careful and painstaking scientific study. *Nothing is ever taken for granted.* A conclusion is never accepted hurriedly. That is why we maintain our Research Department and study hatchery problems year after year.

On warm days, you enjoy a breeze so long as that breeze is not too strong or too cool.

In the Smith, the eggs are comfortable—the temperature and the air movements are designed to keep them comfortable.

This is particularly important on the 18th and 19th days of incubation when the greatest death loss in the shell occurs. At this critical period, the eggs are two to three degrees wa
bator temperature and naturall
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Doesn't this careful, scientif
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Doesn't Your Better Business Judgment S
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Let Smith Protect You on Possible Price Increases

There is a powerful lever lifting commodity prices today. The rise is being felt in every branch of industry, and incubators are no exception to the rule. The price trend is upward.

However, we have anticipated our requirements, and stand ready and willing to protect you on possible price increases if you get in touch with us at once.

We will help you save money as well as make money.

Liberal Terms

Lack of considerable ready cash need not stand between you and a new Smith Incubator. You may buy on the basis of extremely liberal terms if you so desire. The first payment is small, and you are allowed three years to pay the balance. In addition we will make a worthwhile trade-in allowance for your old equipment. Smith leaves no stone unturned to enable a hatcheryman to enjoy the benefits and advantages of Smith Incubators. We will go a long way to put you out in front in this profitable business.

The facts about better hatching—even if they do uproot old ideas—are given to the industry by Smith Research only after the most careful and painstaking scientific study. *Nothing is ever taken*

Doesn't Your Better Business Judgment Su the Advantages of a Smith Incubator an Advisability of Having the Smith Organi Constantly Helping You With Your Pro

There is a Smith Model to Suit Every Need

Buying an incubator involves the careful consideration of housing, cost of operation and the company behind the machine you buy. The Smith takes less floor space per egg capacity than any other machine on the market. Operation of Smith Machines has brought many expressions of enthusiastic praise due to its low cost of current consumption and labor required.

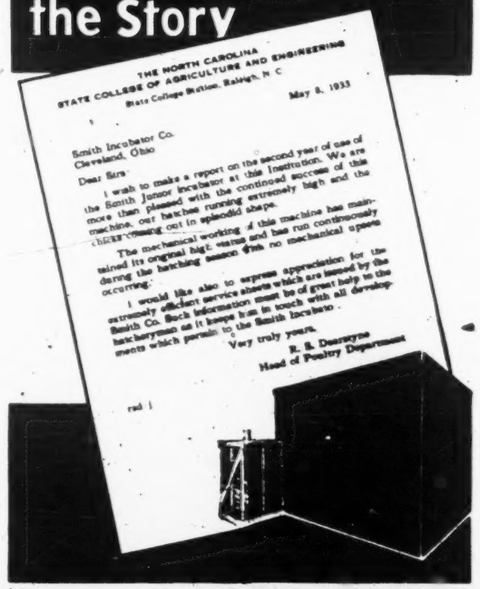
Smith Pays the Freight and Installs It

Smith Service, too, has been highly endorsed because of its quick response to any and all demands. Smith pays the freight, and all installations are made by factory experts without charge. No other incubator manufacturer does this.

There isn't a single, solitary reason why you shouldn't have a Smith. There is a capacity to suit every requirement:

Smith Junior	30,000 Eggs
Smith Intermediate . . .	39,000 Eggs
Smith Old Reliable . . .	52,000 Eggs
Smith Giant	65,000 Eggs

This Letter Tells the Story



THE NORTH CAROLINA
STATE COLLEGE OF AGRICULTURE AND ENGINEERING
State College Station, Raleigh, N. C.

May 8, 1933

Smith Incubator Co.
Cleveland, Ohio

Dear Sirs:

I wish to make a report on the second year of use of the Smith Junior incubator at this Institution. We are once than pleased with the continued success of this machine, our hatches running extremely high and the chicks coming out in splendid shape.

The mechanical working of this machine has maintained its original high record and has run continuously during the hatching season with no mechanical upsets occurring.

I would like also to express appreciation for the extremely efficient service which are issued by the Smith Co. Such information sheets is of great help to the hatcheryman as it keeps him in touch with all developments which permit to the Smith Incubato

Very truly yours,

R. S. Dearmyne
Head of Poultry Department

Today the uppermost thought in the hatcheryman is to lessen labor and hatch. Every iota of information lendi more quality chicks at no increase in o attention of men and women everywhere

This announcement, therefore, com time. It not only serves to impress th stant and careful research that is bein by The Smith Incubator Company, bu this company does not hesitate to practices when such a course will open for the hatcheryman who uses Smith

• • •

Every hatcheryman who operates *fails to enthusiastically endorse Smit* that a Smith Incubator is only a me more profit for the man or woman hatching chicks. This chick business i of problems—subject to constant stu

No one realizes these facts more ke cubator Company, and this realizatio to the whole hatching industry when says: "Hands Off on the Eighteenth D

SMITH INCUBATOR COMPA
CLEVELAND OHIO

Because Eggs are NEVER Disturbed
riod . . 18th Day to Pipping Time

r Scientific Reason Why Smith Research ontinually Advised Against Separate rs and all other methods where retraying on the 18th day is necessary

facts. You cannot rely on follow unproven methods statements should be of terest to hatcherymen who gle exception—in the very onditions which have no history of the industry.

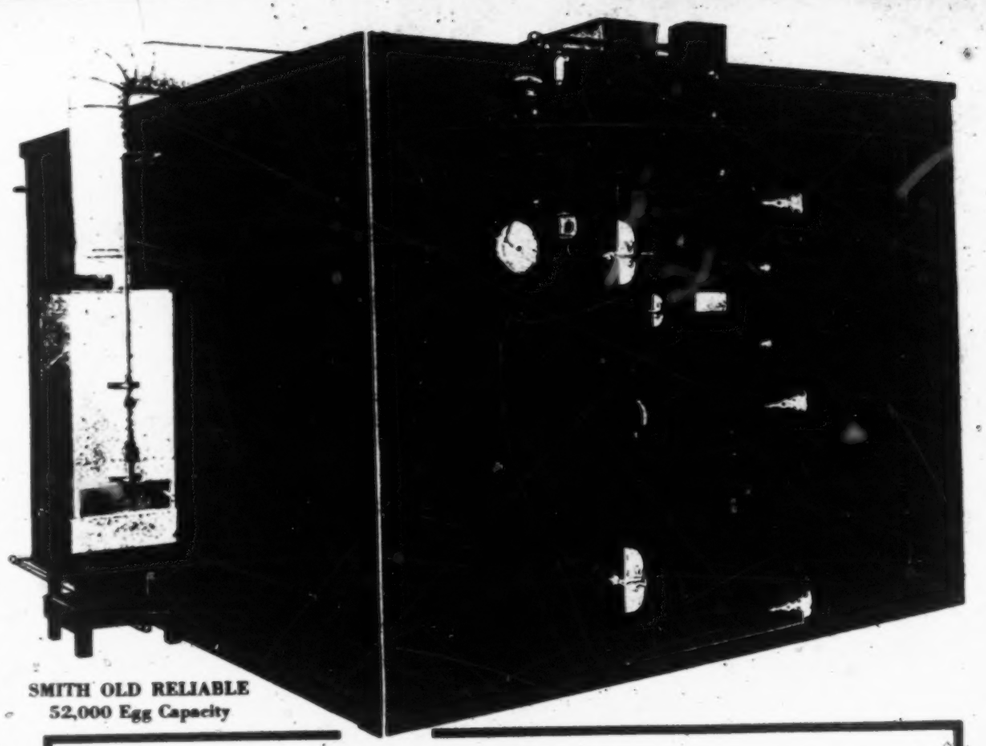
ter hatching—even if they e given to the industry by after the most careful and tudy. *Nothing is ever taken for granted.* A conclusion is never accepted hurriedly. That is why we maintain our Research Department and study hatchery problems year after year.

On warm days, you enjoy a breeze so long as that breeze is not too strong or too cool.

In the Smith, the eggs are comfortable—the temperature and the air movements are designed to keep them comfortable.

This is particularly important on the 18th and 19th days of incubation when the greatest death loss in the shell occurs. At this critical period, the eggs are two to three degrees warmer than the incubator temperature and naturally are cooled by the air which moves around them. They are so sensitive to temperature changes that air gaps or holes in the egg formation in the trays have a definite bearing on the hatchability of otherwise good eggs.

Doesn't this careful, scientific research *prove to you that any method of hatching which involves the moving or disturbance of eggs during the critical period means a decrease in hatching percentages?* We think you will agree that it does.



SMITH OLD RELIABLE
52,000 Egg Capacity

We have stated repeatedly—and say so again—that we do not consider a Smith Incubator merely as so much wood, metal and wiring. We look at it rather as a modern, scientific achievement for the production of the greatest number of saleable chicks at the lowest cost. Such an achievement could not possibly be represented in terms of materials. It must—and is—represented by the findings we have made—the facts we have discovered—which are gladly and freely passed along for the betterment of the hatchery industry.

t Your Better Business Judgment Suggest dvantages of a Smith Incubator and the bility of Having the Smith Organization tly Helping You With Your Problems?

> **ment, properly speaking,** and vests in the assignee a title in so much of the patent itself, with a right to sue infringers; in the second case, jointly with the assignor; in the first and third cases, in the name of the assignee alone. * * *." (p. 255.)

The rights of an absent person, such as The Buckeye Incubator Company, cannot be disposed of without it being present. In *Shields v. Barrow,* 17 How. 130, this Court said:

> "It remains true, notwithstanding the act of Congress and the 47th rule, that a **circuit court can make no decree** affecting the rights of an absent person, and can make no decree between the parties before it, **which so far involves or depends upon the rights of an absent person that complete and final justice cannot be done between the parties to the suit without affecting those rights.**" (pp. 141-142.)

Mr. Chief Justice Taft said, in *Independent v. Radio,* 269 U. S. 459:

> "Indeed both the owner and the exclusive licensee are generally necessary parties in the action in equity." (p. 466.)

Respondent relies upon the doctrine established by this Court in *Crown v. Nye,* 261 U. S. 24, where there was a separation between a right to sue and the legal title. This Court held that both interests must be joined in a common suit. If this were not the rule, we would have endless abuses from speculative lawsuits authorizing rights to sue apart from the ownership of patents, which implies interests to be protected legitimately by the patent.

The evil of permitting a separation of legal title and the right to sue is amply demonstrated in this case. Smith has been conducting a "campaign" of litigation.* Of

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* Since the court sustained the patent, some 358 additional cases have been brought by him. (Official Gazette.)

course, the vast majority of defendants were using the smaller incubators. Smith was not being injured competitively, but his profit was in litigation. His contract provided for no share of this return to be turned over to Buckeye. As Mr. Chief Justice Taft said in the above case:

> "These cases do not present the same facts as the one before us; but *they indicate clearly what view the courts deciding them would have taken of an effort like that in the case at bar to divide up the monopoly of patent property so that the patentee retains the right to make, use and vend, but gives to many different individuals the right to sue certain named infringers, respectively, and that with the sole motive of harassing them such as is avowed in the recitals of the instrument before us.* If held legal, it would give the patentee an opportunity without expense to himself to stir up litigation by third persons that is certainly contrary to the purpose and spirit of the statutory provisions for the assigning of patents.
>
> "Nor do we think that the principle of *Patterson v. Kentucky*, 97 U. S. 501, or the instance of a patent for an improvement on a machine, patent for which is held by another, involves anything inconsistent with our conclusion that the right to exclude others conferred in a patent can only be conferred upon one who has the common law right to use, make and vend." (pp. 38-39, *Crown v. Nye*, 261 U. S. 24.)

The Court then concludes:

> "If the owner of the patent when the infringements took place has assigned his patent to one, and his claims for damages for infringement to another, then the latter can not sue at law at all but must compel his assignor of the claims to sue for him. In equity both such assignor and the assignee who is the real party in interest must join as plaintiffs." (p. 44.)

Recently, this Court, in *Peters v. Bates et al.*, 295 U. S. 392, affirmed this view that you could not maintain a suit on a patent based upon a contractual right to recover profits

and damages where the plaintiff did not own that portion of the patent invaded. In this case, the Court held that a sale by a patentee of all his interest in a pending suit to enjoin infringement and for an accounting, but passing no right in the patent, gives the purchaser no right to an injunction, and hence, no right to intervene, saying:—

> "Harriet E. Cole, the purchaser at the receiver's sale, has asked leave to intervene in this Court, but as she has not acquired through her purchase the title to, or an interest in, the patent, she is not entitled to seek an injunction to restrain infringement. *Crown Die & Tool Co. v. Nye Tool Works*, 261 U. S. 24, 38, 39; *Boomer v. United Power Press Co.*, 13 Blatch. 107, 112, 113; *Kaiser v. General Phonograph Supply Co.*, 171 Fed. 432, 433. The right to such an injunction underlies the equitable jurisdiction here invoked. *Root v. Railway Co.*, 105 U. S. 189. The motion for leave to intervene is denied.
>
> "By order of the state court, the receiver, as such, succeeded to the patent right and to the cause of action here involved. But the receiver, while retaining the patent, has disposed, with the approval of the state court, of his entire interest in the present suit against respondent. As the petitioner in these circumstances is not in a position to maintain this suit, the Court is of the opinion that the writ of certiorari should be *Dismissed.*" (p. 394.)

This Court in *Crown v. Nye, supra,* cited with approval Mr. Justice Blatchford's opinion in a case involving similar facts when he was sitting on Circuit in the case of *Gordon v. Anthony,* 16 Blatch. 234, 10 Fed. Cas. 773, No. 5605, where he said:

> "'A claim to recover profits or damages for past infringement cannot be severed from the title by assignment or grant, so as to give a right of action for such claim, in disregard of the statute. The profits or damages for infringement cannot be sued for except on the basis of title as patentee, or as such assignee or

grantee, to the whole or a part of the patent, and *not on the basis merely of the assignment of a right to a claim for profits and damages, severed from such title.*" (*Crown v. Nye,* 261 U. S. 24, 42.)

In *Radio v. Hohenstein,* 289 F. 757, 759, (C. C. A. 2), the Court said:

"There can be no assignment by the owner of a patent of the remedy to which the patent entitled him, unless he also assigns the patent itself, out of which the remedy grows." (page 759.)

In *Moore v. Marsh,* 7 Wall. 515, 520, this court said;

"• • • but where the assignment is of an undivided part of the patent, the action should be brought for every infringement committed subsequent to the assignment, in the joint names of the patentee and assignee, as representing the entire interest." (Page 520.)

Tyler, et al. v. Tuel, 6 Cranch 324; *Moore v. Marsh,* 7 Wall. 515, 520; *Gayler v. Wilder,* 10 How. 477; *United States v. Loughrey,* 172 U. S. 206; *Independent Wireless Telegraph Company v. Radio Corporation,* 269 U. S. 459; *Six Wheel Corporation v. Sterling,* 50 F. (2d) 568 (C. C. A. 9); *Radio v. Hohenstein,* 289 F. 757 (C. C. A. 2); *Green v. Le Clair,* 24 F. (2d) 74, 77 (C. C. A. 7); 48 *Corpus Juris,* Sec. 541, page 338.

The case in the Seventh Circuit of *Green v. Le Clair, supra,* involved facts that are closely parallel to the present facts. The court followed this Court in *Crown v. Nye, supra.*

In this case, Smith does not own the undivided part of this patent which corresponds to the right of recovery for the invasion here, if any, which is in connection with 5,000-egg incubators, as the Buckeye Incubator Company had the exclusive rights up to 16,500 egg capacities.

While this question can be raised at any time, it was raised in the District Court and in the Court of Appeals for the Second Circuit in this case. *Alcohol v. Canfield*, 11 F. (2d) 214, 216 (C. C. A. 2d); *Walker on Patents*, Vol. 1, page 545, Sec. 450, 6th Ed.

We, therefore, say that Smith has no place in this Court as the sole party plaintiff. Indeed, we do not think that Smith has any right here at all.

POINT XVI.

CONCLUSION.

Petitioner is asking here a broader construction of his patent than was accorded to him by this Court in the *Snow* case. This is necessary to petitioner to make out even a prima facie case of infringement. In contrast with this position, petitioner is asking for a much narrower construction of his patent when the Hastings prior use is being considered in order to try to avoid that prior use by limiting the Smith patent.

Respondents are content with this Court's interpretation of the patent in the *Snow* and *Waxham* cases. With such an interpretation and using petitioner's own witnesses and Exhibit B introduced by petitioner from the *Stone* case as to the Hastings prior use, anticipation of the Smith patent is clearly demonstrated. We say this because petitioner can certainly have no complaint about the accuracy of his own witnesses and his own exhibit drawing.

Respectfully submitted,

H. A. TOULMIN,
H. A. TOULMIN, JR,
Counsel for Respondents.

SUPREME COURT OF THE UNITED STATES.

Nos. 35, 36.—October Term, 1936.

S. Harold Smith, Executor of the Estate of Samuel B. Smith, deceased, Petitioner, 35 *vs.* A. B. Hall and L. C. Hall, doing business as Hall Brothers.	On Writ of Certiorari to the United States Circuit Court of Appeals for the Second Circuit.
S. Harold Smith, Executor of the Estate of Samuel B. Smith, deceased, Petitioner, 36 *vs.* James Manufacturing Company and Elmira Hatcheries, Incorporation.	

[April 26, 1937.]

Mr. Justice Stone delivered the opinion of the Court.

These cases involve the validity of the Smith Patent No. 1,262,860, of April 16, 1918, and more particularly the question whether Smith was anticipated by the prior use of the patented invention by Hastings.

In *Smith* v. *Snow*, 294 U. S. 1 (1935), we held the patent valid and infringed. But in that case the Hastings prior use was not presented or considered. At that time the present infringement suits brought by petitioner against respondents Hall and James were pending in the district courts for Connecticut and for Western New York, respectively. In view of the definition given to the patent by our decision, the Hastings defense assumed an importance in these suits apparently not attributed to it in earlier litgation, and it has been developed in the records now before us more fully than in any earlier case.[1]

[1] Before the decision in Smith *v.* Snow, 294 U. S. 1, the Hastings defense had been considered and rejected in Buckeye Incubator Co. *v.* Wolf, 291 Fed. 253, aff'd, 296 Fed. 680 (C. C. A. 6th), in Buckeye Incubator Co. *v.* Cooley, 17 F. (2d) 453 (C. C. A. 3rd), and in Buckeye Incubator Co. *v.* Stone, a suit in the District Court for Oregon, by a special master's report, which does not appear to have been reviewed by the court. In the numerous other litiga-

The decrees of the district courts rejecting the defense were reversed by the Court of Appeals for the Second Circuit, 83 F. (2d) 217, 221, which found prior use by Hastings. We brought the cases here on certiorari, — U. S. —, to resolve the conflict in the result of the decisions below with that of our decision in *Smith* v. *Snow*, *supra*. The two suits came to the court below, as they do here, upon different records. The court treated the cases as though the two records constituted a joint record applicable to both cases, and petitioner presents the cases here jointly. See *Butler* v. *Eaton*, 141 U. S. 240, 243, 244; *Dimmick* v. *Tompkins*, 194 U. S. 540, 548; *Washington & Idaho R.* v. *Coeur d'Alene Ry. & Navigation Co.*, 160 U. S. 101, 103; *deBearn* v. *Safe Deposit & Trust Co.*, 233 U. S. 24, 32; *West Ohio Gas Co.* v. *Public Utilities Commission of Ohio (No. 1)*, 294 U. S. 63, 70-71; cf. *Reed* v. *Allen*, 286 U. S. 191, 198, 199.

The Hall suit is for an infringement of Claim 1 of the patent, and the James suit for infringement of Claims 1, 2, 3 and 5. Claims 1, 2 and 3 are claims for a method of incubation of a plurality of eggs. Claim 5 is a claim for an apparatus adapted to the use of the method and is of significance in the present litigation only if a method claim is sustained. Claim 1 may be taken as typical of the other method claims. In *Smith* v. *Snow*, *supra*, its essential elements were stated to be (p. 8):

"(a) the arrangement of the eggs at different levels in staged incubation in a closed chamber, having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture; (b) the application to the eggs of heated air in a current created by means other than variation of temperature; and (c) as marking the boundaries of the claim, the current of air is to be of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature whereby the air will be vitalized, moisture conserved, and the units of heat carried from the eggs in the more advanced stage to those in the less advanced."

Staged incubation is the successive setting of eggs in the same incubator at brief intervals. At different stages in the course of

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tions of the Smith patent which preceded the decision in Smith v. Snow, *supra*, see 294 U. S. at 3, Note 1, the Hastings defense was not urged. Since the decision in the Snow case the defense has been interposed in suits in the district courts, Smith v. Street (Dist. Ct. for Minn.), Smith v. Sims (Dist. Ct. for Indiana) and it has recently been sustained by the Supreme Court of Canada, in The King v. The Smith Incubator Co., (1937) ——.

the three weeks period of incubation the eggs have different temperatures, those in the earlier having lower temperatures than those in the later stages. When subjected to a temperature approximating that of body heat, the eggs of the earlier stages absorb heat and those of the later stages give off heat. It was pointed out in the opinion in the *Snow case* that a demonstrated advantage of the Smith method over that of the earlier type of incubator, in which there was no propelled current of air, is that it facilitates the continuous operation of the incubator through staged incubation, and makes it possible in the process of incubation to increase the number of eggs in a single incubator from a few hundred to many thousands.

To avoid infringement, it was insisted in the *Snow* case that the claim was restricted, by the specifications and drawings of the patent, to use of the method in an apparaus by which the propelled current of heated air was first brought in contact with the more advanced eggs. In rejecting that contention the opinion pointed out that neither the claim itself, construed in the light of the specifications, nor the successful operation of the method, required the arrangement of the eggs in any particular order; that the continuous circulation of air of appropriate temperature in a closed chamber, called for by the claim, served to equalize the temperature at the desired degree by carrying heat units from the more advanced eggs of high temperature to the less advanced eggs of lower temperature, regardless of the particular order in which it passed the eggs of different stages. We said (p. 14):

"the claim does not call for a particular order or arrangement of the eggs in staged incubation in the incubator, or that the propelled current should reach them in any particular order, or that it should be guided, controlled or directed by any particular means, or in any particular manner other than that it should be of sufficient velocity to produce the results prescribed by the claim."

Thus construed, infringement of the patented method could not be avoided nor anticipation of it denied by showing that the challenged use was with different arrangements of the eggs or with a different structure, for guiding or controlling the propelled current of air within the closed chamber, from any exhibited in the specifications and drawings of the patent.

To establish the Hastings prior use respondents rely on the proof of his construction of an incubator in Brooklyn, New York, early in

1911, and its use in the hatching season in the early months of that year and of 1912, and on proof of his construction of another in Muskogee, Oklahoma, in 1911, and its use in 1912 and 1913. They offer documentary corroboration in more or less contemporary articles in published journals and in a patent application with its supporting documents, filed in the patent office in 1911.

Without stopping to state the evidence in detail, it is established by the testimony of Hastings, abundantly corroborated, and not seriously denied, that, apart from the setting of eggs in staged incubation, which will be presently discussed, these incubators employed all the elements of the Smith method, and that their operation was successful in the sense that they were each used for hatching eggs for two successive seasons and that the percentage of the hatches was comparable to that of the smaller still air incubators then in use. Hastings' incubators were closed chambers, with restricted openings. A current of heated air was propelled by a motor driven fan in such manner as to come in contact with the eggs placed within the chamber in stacks of trays, and to return to the fan by means of which it was continuously recirculated. See *Smith* v. *Snow, supra,* 19, 20; *Waxham* v. *Smith,* 294 U. S. 20, 22. Both incubators were of large capacity. That in Brooklyn was built for 6,000 eggs, although it does not appear that it ever contained more than 2,000 eggs at any one time, and that in Muskogee was for 30,000 eggs. It is plain that Hastings built and operated incubators suitable for the use of the Smith method, but petitioner sharply challenges the contention that he did use that method in either of them. It is said that there is no convincing proof that eggs were ever placed in the Brooklyn incubator in staged incubation, and that the structure of the other and the manner of its use were such as to show that the Smith method as we have described it was not employed. These are the crucial issues.

Hastings built and operated the Brooklyn incubator for Davis, who conducted a poultry farm as the means of supplying chickens for a restaurant which he also operated. After Hastings left Davis' employ in May, 1911, the latter operated the incubator during the season of 1912. Subsequently he went out of the poultry business and dismantled the incubator. Hastings testified, specifically and in detail, that the eggs were placed in the Brooklyn incubator in staged incubation. Davis, corroborated to some extent by his wife,

testified that the eggs were placed in the incubator at twice a week intervals, when they were delivered, at the rate of one or two crates a week, by the poultryman from whom they were purchased. The eggs were placed in trays in the incubator chamber where they were exposed to a current of heated air under thermostatic control. The air, maintained at a practically uniform temperature, was continuously circulated throughout the chamber by means of an electric fan. This oral testimony, if taken at its face value, would show that the Smith method was used in the Brooklyn incubator with eggs in staged incubation. But without corroboration, it is insufficient to establish prior use, *The Barbed Wire Patent*, 143 U. S. 275, 284; *Deering* v. *Winona Harvester Works*, 155 U. S. 286, 300; *Eibel Process Co.* v. *Minn. & Ontario Paper Co.*, 261 U. S. 45, 60, and we turn to the documentary evidence that Hastings knew the method of the patent and used it in his Brooklyn structure.

Before 1908 Hastings had had an extensive experience in poultry culture. In 1908 and 1909 he was in the service of the Department of Agriculture, and in the course of his duties he inspected many poultry plants and experimental stations operating incubators. He was the author of a book, "The Dollar Hen", published in 1909, in which he described a procedure for the incubation of eggs. It spoke of an incubator in which "At hatching times the eggs are spread out in trays in a special hatching room, which is only large enough to accommodate chicks in the amount of one-sixth of the incubator capacity, for twice a week delivering or one-third if weekly deliveries are desired." It also described an incubator in which "All temperature regulation is by means of air heated (or cooled as the case may be) outside of the egg rooms and forced in to the egg rooms by a motor driven cone fan, maintaining a steady current of air, the rate of movement of which may be varied at will. The air movement maintained will always be sufficiently brisk, however, to prevent an uneveness (*sic*) of temperature in different parts of the room." The reference to an incubator in continuous operation, for deliveries once or twice a week, and to temperature regulation of the egg chamber by a propelled current of heated air, moving at a velocity sufficient to maintain an even temperature, shows that Hastings had the conception of staged incubation long before he built the Brooklyn incubator.

On May 3, 1911, while he was in Davis' employ, and when the Brooklyn incubator was in operation, Hastings filed an applica-

tion for a patent, Serial No. 624,885. Documents in support of the application filed as late as July 1911, give Hastings' address as that of Davis in Brooklyn. The application discloses a chamber with restricted openings in which the eggs are placed and through which a steady current of air, heated to a uniform temperature, is propelled by a constantly moving electric fan, so as to circulate throughout the chamber. Although the application taught the use of fabric or perforated partitions for the purpose of causing an even distribution of the current of air, it specified that the invention was "not limited to any particular circulation or movement of the air and by the use of the fan the gravity drafts may be overcome and the air caused to move in any desired direction." The application was prepared by Hastings, but upon its rejection by the examiner, he sought the aid of counsel who, on May 24, 1912, amended the claim and filed a statement in explanation of it, stating that they had derived data and information from a practical hatchery of large capacity then being operated by the applicant.

In this statement it was pointed out that "the temperature of the eggs themselves varies in accordance with the stage of their development and the gaseous emanations tend to produce vitiated conditions which exert a marked influence upon the eggs themselves and especially upon the adjacent eggs, if the eggs are at different stages of their development"; that "in a large hatchery where many hundreds and even thousands of eggs are being continually advanced in the process of incubation the ordinary means for causing the circulation of air by convexion currents through and in the incubating chamber has been demonstrated as being totally inadequate, and this is believed to be one of the principal reasons why, up to the present time, hatcheries of large capacity have proven to be practical failures." And finally it was stated that Hastings had "discovered that the temperature and gaseous stratification in the incubating chamber must be overcome by a mechanically forced circulation of the air which will insure a correct and uniform influence of the air upon all of the eggs in the incubating chamber, and this forced circulation must be such as to overcome the counteracting influence of the eggs upon the air when said eggs are in the different stages of incubation."

In the brief of counsel on appeal to the Board of Examiners-in-Chief, dated December 30, 1912, these points were elaborated and

explained. It was stated: "The problem has been to enable the incubating operations to be carried on continuously, if so desired, with eggs at all stages of development, and with all of a vast number of eggs subjected to the same temperature and atmospheric conditions best adapted for the development of the embryo." It was pointed out that "during the initial stage of incubation the eggs absorb heat whereby their temperature is raised, but during the final stages the vital processes generate heat, and in practice it is found that with vast numbers of eggs assembled in a single compartment and with eggs at all stages of incubation but very little extraneous heat need be supplied, because the eggs in the later stages of development supply the necessary heat for the eggs in the earlier stages of development. In practice, however, a source of heat is always maintained in order to permit of proper regulation."

It was then explained that the "temperature stratification in the egg chamber" is overcome "through the provision of a mechanically operated air forcing means which would force a rapid circulation of air through the whole collection of eggs in the chamber and past the heater. The mechanical air forcing means is an essential factor, if heat is to be conserved and the conditions maintained uniform." And later it was said: "It is through the instrumentality of these elements that the temperature and gaseous stratification of the air in the chamber is overcome and the eggs are uniformly subjected to the influence of air of the same temperature and composition."

The brief also quoted from a statement of Hastings, which, after observing that temperature stratification may be overcome in a hatching chamber holding many thousands of eggs by applying to them a mechanically impelled blast of air, says:

"In the Hastings hatchery, a current of air is blown past each and every egg at the rate of thirty feet per minute and this rapidly moving air quickly bringing the temperature of the egg to approximately that of the air. This method of heating keeps the temperature of the eggs in the advanced state of incubation down within a few degrees of that of the air, the exact difference being regulated at will by adjusting the speed of the fan. When properly adjusted the same blast of air used to heat fresh eggs does equally well for eggs in the advanced stages just as the same temperature of the body of the hen incubates the eggs at all stages of development, without recourse on the hen's part to the 'hatching fever', erroneously supposed to explain the high temperature of eggs at a more

advanced stage of development. Owing to this fact eggs at all stages may be handled simultaneously with uniformly good results."

He also mentioned the introduction of moisture into the current of air by the use of a spray or the introduction of outside air at the fan.

We think it plain that at the time these documents were filed the essential elements for hatching eggs in staged incubation, as they were later claimed in the Smith patent, were known to Hastings, and that he was familiar with a structure capable of employing that method. They afford convincing corroboration of the oral testimony that the incubator in use in Brooklyn immediately preceding the filing of the application, and both incubators in use during its pendency, employed the method of the Smith claim. Whether Hastings knew fully and precisely the scientific principles involved in the procedure thus outlined is immaterial. It is enough if he knew and used the method with operative success. *DeForest Radio Co.* v. *General Electric Co.*, 283 U. S. 664, 686. He did know the method of setting eggs in staged incubation in a closed chamber and continuously circulating through them a current of moistened air at an appropriate temperature, and he knew that the advantages of the use of this method over the type of incubator in which there were no mechanically propelled currents of air, were that it facilitated the continuous operation of the incubator and the simultaneous incubation in a single chamber of a greatly increased number of eggs.

The disclosures made in the Hastings brief were so complete that they might well have been used in support of the Smith claim. Pressed to their conclusion, they would have warranted award of the patent later granted to Smith. See *Smith* v. *Snow, supra*, 14-16. While the Patent Office file on the abandoned claim is not relied on as a prior publication, see *The Corn-Planter Patent*, 23 Wall. 181, 210-211; cf. *Alexander Milburn Co.* v. *Davis*, 270 U. S. 390, 400, 402, it is competent and cogent evidence to determine the nature and date of the invention which the inventor claims to have embodied in working form, see *The Corn-Planter Patent, supra*, 211; *United States Blind Stitch Mach. Corp.* v. *Reliable Mach. Works, Inc.*, 67 F. (2d) 327, 328 (C. C. A. 2d); Walker, Patents (6th ed., 1929), §§ 97, 98.

In 1911, Hastings induced Lieber, a local lawyer and business man of Muskogee, Oklahoma, and another, to organize a corporation for the promotion of the Hastings method of incubation. Under its auspices Hastings constructed there an incubator of 30,000 egg capacity in the latter part of 1911 and directed its operation during the 1912 hatching season. Its operation was continued by an associate in the season of 1913. The general plan of its construction and mechanical operation as testified to by Hastings is abundantly corroborated by disinterested witnesses and contemporary photographs and publications describing it. The principal witnesses are Lieber, who furnished the money for the enterprise, Peabody, the electrical contractor who installed the fan and other electrical equipment of the incubator, and Hickox, manager of the local electric light company which supplied the current for the incubator. In 1912, Hickox took photographs of the incubator in operation, and prepared a written description of it. These were produced at the trial.

The uncontradicted evidence is that the incubator consisted of a large room in which there were a series of stacks of egg trays with wire mesh bottoms. Each stack, having a capacity of 5,000 eggs, was placed in a separate compartment. There was a corridor in front of the trays, giving access to the stacks, which, in operation, were closed on the corridor side by removable shutters. A motor-driven fan, placed at one end of the incubator, propelled a current of air over a moisture pan, thence through a passage at the back of the egg trays into contact with a heating pipe under thermostatic control. From that point it passed into a passageway directly above the stacks of egg trays, thence downward through the trays to a passage beneath them, through which the current was returned to the fan in continuous circulation. A number of other witnesses, having no connection with the Hastings enterprise, including three called by petitioner, saw the incubator in operation and corroborate the testimony as to its main features; the presence within the incubator of thousands of eggs, placed in stacks or trays, hatched by the circulation through them of a fan-propelled heated current of air.

An article giving some account of the Hastings incubator, prepared by an editor of Poultry Culture and published in that journal for February, 1912, mentions the use of two flumes carrying

the current of air from the fan, only one of which brought the air into contact with the heater. It speaks of a use of a means for controlling temperature of the air passing to each egg compartment, by mixing in proper proportions the flow of air from the two flumes. The existence of such a double conduit is not corroborated by any witness or any document, and is explicitly denied by Lieber, testifying in behalf of petitioner in the *Stone* case, made a part of the present record, and by Hastings. Peabody, who installed the electrical equipment, and Hickox, who prepared a contemporary written description of the incubator, make no mention of it. Drawings showing a single passageway carrying the current of air to the egg stacks were identified as accurate by Hastings, Lieber and Peabody. We conclude that, whatever experimental proposals or installations may have been made, the incubator was used with a single air passage above the egg compartments.

All the witnesses agree that the incubator was commercially operated during the hatching seasons of 1912 and 1913, and that it hatched different batches of eggs placed in it with varying success. The hatches of the eggs furnished by some customers were failures. Others were successful. One of petitioner's witnesses testified that the hatches never exceeded 50%. Lieber estimated that 50% was the average, with some people getting none and others getting 80%. Hastings, who in the Canadian suit testified that the average was 40%, stated that some settings ran up to 70%. There is no testimony of any mechanical failure of the incubator after the initial trials of it, as a result of which an electric blower was substituted for the fan of lesser power. In 1912, Hastings departed for Texas, where he started another incubator. After operating the incubator through another hatching season, Lieber, his financial backer, abandoned the enterprise.

As with the Brooklyn incubator, the critical issue is whether that in Muskogee was used with eggs in staged incubation in the manner of the Smith claim. It is established beyond doubt that eggs in different stages were in process of incubation there at the same time. The incubator was used in large measure for "custom hatching." At frequent intervals, patrons brought their eggs in relatively small quantities to be placed in the incubator for hatching, and received at the end of the hatching period their share of the newly hatched chicks.

The testimony of Hastings that staged incubation was employed in the Muskogee structure is corroborated by this course of business and by the contemporaneous statements and brief filed with his patent application. He testified that eggs of different stages were sometimes, though not always, placed in the same compartment of the incubator. The Poultry Culture article of February, 1912, states, after describing the use of the fan-propelled current of heated air in the incubator: "eggs at all stages can be placed in the same trays of the Hastings hatchery, with little or no injury. Mr. Hastings hatched several thousand eggs under such conditions in his Brooklyn plant last year."

Petitioner stresses the point that in the Muskogee incubator, the stacks of egg trays were concededly placed in separate compartments, with openings at the top having slide doors which could be used like a valve for regulating the volume of air flowing into each compartment. Hastings testified that the slide doors were used to cut down the supply of air when there were few or no eggs in a compartment and that they were left open when the compartment was substantially full of eggs. Petitioner points to this and to some testimony by Hastings and Lieber that the slide doors could be used to regulate the temperature in each compartment through control of the volume of air passing through them, and to testimony by Lieber that the eggs, as received, were first placed in one compartment and then at intervals, as other eggs came in, were moved from one compartment to another, and that the doors were used to control variations of temperature in the different compartments.

From this the inference is drawn that only eggs of the same stage were placed in any one compartment, and from the inference it is argued that they were not set in staged incubation. But even if the inference is correct, it establishes only that a special method or device to guide and control the air current was used, not that staged incubation was wanting. The presence or absence of a device for controlling the current of air within the incubator is no part of the Smith claim. Our opinions in *Smith* v. *Snow, supra,* and *Waxham* v. *Smith, supra,* were careful to point out that infringement of the method could not be avoided by using it in conjunction with such a device. The presence of the device in the Muskogee incubator did not foreclose anticipation if the method was used. Since the circulating current of air passed repeatedly into the compartments in the Muskogee structure and came in con-

tact with the heating pipe and with the eggs in the several stacks of trays, the tendency of the operation was to equalize the temperature and to carry heat units from the more advanced to the less advanced eggs. This is the method of the patent and it was employed in the Muskogee structure whether the trays of eggs of different stages were placed in the same or different compartments.

The patent was sustained in the *Snow* and *Waxham* cases, *supra*, only by establishing that neither the arrangement of the eggs, nor the particular order in which the propelled current should reach the eggs, nor the manner in which it was guided or controlled, is part of the patent claimed. It was this construction of the claim which gave a new significance to the Hastings incubators, different from any recognized by previous decisions. The petitioner, having sought and obtained a broad construction of his claim, cannot now narrow it so as to avoid anticipation by showing that the claimed method was used in a particular form of structure not claimed. It was the method thus defined which Hastings used, regardless of the particular structure which he devised to guide and control the current of air in his incubator, or the order in which it came into contact with the heater and eggs of different stages. It is immaterial that his structure for using the method was neither the best possible nor as skilfully designed or used as that later employed by Smith. *Pickering* v. *McCullough*, 104 U. S. 310, 319; cf. *Telephone Cases*, 126 U. S. 1, 531, 536.

In view of this conclusion it is unimportant whether Hastings used the method in his Brooklyn incubator. But we think the testimony of its use there is sufficiently corroborated. His statement in "The Dollar Hen", already quoted, published before the Brooklyn structure was erected, shows clearly that he contemplated the continuous operation of an incubator with the eggs set in staged incubation so that they would be hatched for deliveries once or twice a week, by a procedure substantially that of the Smith claim. The circumstances attending the Brooklyn use, which called for the setting of eggs at frequent intervals in an incubator of large capacity, the structure exhibited in Hastings' patent application, the subsequent course of the application in the Patent Office, and finally the renewed effort at Muskogee embodying the same principles, although with an immaterial variation in structure, and the fact that both incubators functioned, are convincing evidence that

Hastings knew and used in appropriate combination, both in Brooklyn and in Muskogee, the essential elements of the Smith claim. They support the heavy burden of persuasion which rests upon one who seeks to negative novelty in a patent by showing prior use. See *Radio Corporation of America* v. *Radio Engineering Laboratories*, 293 U. S. 1, 7, and cases cited.

Petitioner urges, and we have considered, numerous other objections to the sufficiency of proof of the Hastings prior use. The only one calling for any comment is the suggestion that the Brooklyn and Muskogee enterprises were not commercially successful. Commercial success may turn the scale when invention is in doubt, *Paramount Publix Corp.* v. *American Tri-Ergon Corp.*, 294 U. S. 464, 474; *DeForest Radio Co.* v. *General Electric Co.*, *supra*, 685, and the want of it may, in some circumstances, be evidence of want of operative success. But here Hastings by the use of a method which we have sustained as an invention, *Smith* v. *Snow*, *supra*, has attained the particular results described by the patent. He knew the method and used it in a device capable of employing it. In such circumstances want of commercial success, which the record suggests may have been due to lack of technical and business skill, is not an indication that there was no prior use.

Upon the records now before us we must conclude, as did the Supreme Court of Canada upon a similar record (Footnote 1, *supra*), that Hastings antedated Smith. The Smith method was "known or used by others in this country before his invention or discovery thereof." 35 U. S. C., § 31.

Affirmed.

Mr. Justice VAN DEVANTER took no part in the consideration or decision of these cases.

A true copy.

Test:

Clerk, Supreme Court, U. S.